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COMPUTERWORLD

Xerox bets on virtual office

By Michael Fitzgerald
WALTHAM, MASS.

Having lost more than $1 billion in the past two years, Xerox Corp. is laying its hopes for future profits on the doorstep of the virtual office.

The $14.2 billion company is rolling out notebook computers to its 4,000-person sales force, automating that sector of the company for the first time. Xerox hopes the move will cut costs and sharpen sales force productivity.

STEPHANIE FAUCHER

Xerox's project is part of a significant corporate trend toward the virtual office "that is moving from its early phases," said Steven L. Goldman, a professor at Lehigh University in Bethlehem, Pa., and co-author of the new book *Agile Competitors and Virtual Organizations*. The goal of this movement, Goldman added, is to put salespeople, engineers and customer service representatives where their customers are.

First team

Leading the charge at Xerox is the Waltham, Mass.-based New England North District sales group, which recently became one of the first of the company's 62 U.S. sales districts to receive either Compaq Computer Corp. Elite or IBM PC Co. ThinkPad 755 notebooks.

The notebooks give the sales force immediate access to Xerox's corporate network and provide it with software to quickly create

Xerox, *page 123*

Novell hits 'infobahn'

Upcoming products said to ease user access to public, networked data

By William Brandel
BOSTON

Novell, Inc. is preparing to roll out dramatically advanced LAN client technology that it promises will make networks accessible to even the most technophobic user.

Before year's end, Novell will ship its Corsair advanced user interface, which will enable users to browse the Internet and applications residing on NetWare networks, Novell Chairman Robert Frankenberg told attendees at a Massachusetts Software Council meeting here last week.

While promoting new user access capabilities that Novell would provide, Frankenberg also said Novell's Embedded Systems Technology will debut in public phone systems within the year. NEST, when incorporated into intelligent devices — from PCs to personal digital assistants — would enable the devices to transmit data to and from a NetWare network.

STELLA JOHNSON

Novell's Robert Frankenberg: *The Corsair interface 'will make work an activity and not a place'*

Hardware on hold

"Instead of Plug and Play, users need plug and work," Frankenberg said in an apparent swipe at rival Microsoft Corp.'s long-awaited architecture that integrates hardware with its operating systems. Novell plans instead to concentrate on providing network services to access public data — "probably the largest untapped

Novell, *page 15*

Democracy goes on-line

By Ellis Booker
and Mitch Betts

Politics may never be the same.

For next week's statewide elections in California, tens of thousands of voters will be able to access a World-Wide Web server containing poll reports culled every five minutes from the state's Election Web Server.

But California's Internet server, set up and maintained by Digital Equipment Corp. in conjunction with the California Secretary of State's Office, is just one of many public and private projects around the country to take advantage of the Internet for voter education and as a pipeline to elected officials.

Candidates have embraced on-line networks very rapidly this election cycle, with an increasing number of politicos adding electronic-mail addresses to their letterheads.

"This year we're starting to see more and more of this," said Becky Cain, president of the League of Women Voters of the U.S. in Washington.

Voters plug in

The league, in fact, has launched some 20 pilot projects as part of its Wired for Democracy program. Just last week, the league announced Voter Online Information and Communication Exchange, a four-city pilot program to provide information on local, state and national candidates via a Web server.

Many observers attribute the groundswell of activity to the Clinton administra-

Democracy, *page 123*

Goblins haunt NASDAQ

By Thomas Hoffman

It's creepy, it's kooky, and it's altogether spooky. No, not Halloween, but the seemingly unmerciful series of computer glitches that have recently plagued the NASDAQ exchange.

Since July, NASDAQ has experienced a variety of software-, hardware- and even squirrel-related power disruptions that have raised the ire of Wall Street traders, not to mention their information systems staffers. Last Tuesday, the exchange suffered yet another communications software gaffe — this time interrupting trading for 15 minutes.

NASDAQ's string of computer snafus has prompted Reps. Edward Markey (D-Mass.) and Jack Fields (R-Texas) to ask the U.S. General Accounting Office to study the exchange's computer prob-

NASDAQ, *page 16*

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SMART MODELS FLOAT

By Gary H. Anthes
ARLINGTON, VA.

An 18-wheeler laden with war supplies crawls across the cavernous cargo bay of a U.S. Navy ship. It rolls up a ramp as it heads for the dock. But before clearing the vessel, the truck smashes into a support column, causing extensive damage to both truck and ship.

Virtual reality *is expected to shrink development cycles for complex items by many months and millions of dollars, according to the Pentagon*

But not to worry — no court-martial will result from this mishap. With a few clicks of a mouse, the ship designer moves the column elsewhere and tries again.

At first glance, there is nothing particularly remarkable about this simulation at the Advanced Research Projects Agency here. Moving objects around in computer-aided design simulations is hardly rocket science anymore. But this ARPA demonstration heralds a technology that observers say will revolutionize the way complex objects are designed and manufactured.

Smart models, *page 28*

What's wrong with this picture?

LEGENT

Back in the 15th century, this was a generally accepted view of Hell. Today, of course, we can

see how inaccurate it really is. Not one person, for instance, is shown trying to manage a corporation's distributed systems. You can probably forgive the artist for this oversight. But you may be wondering when someone will deliver the management software that can help you take care of this mess. At Legent, being that someone is what we're all about. And so far, our efforts have resulted in the most extensive set of industrial-strength, distributed systems management tools available. We've also developed an open architecture called XPE™ that we think is pretty remarkable (some of the toughest analysts in the industry tend to agree). XPE lets our software work together across almost anything you can wire together, regardless of function or platform, from mainframes to UNIX workstations to PC LANs. Which means you can manage your distributed systems from the platform of your choice, something our customers tell us has definitely made their lives easier. Is it Paradise? No, not yet. But we can promise you one thing: It's a lot better than where you are right now.

For more information about Legent products and strategies, call 1 800 676-5468 extension 2500. We'll fax you a technical overview the same business day.

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What's Inside

October 31, 1994

Paul Dravis

PRO

Business as usual?

Client/server is more marketing hype than a concrete technology, claims pundit Bob Djurdjevic. If that's the case, says consultant Paul Dravis, then how do you explain all the downsizing projects out there? The debate takes place in **In Depth** page 92.

Bob Djurdjevic

CON

NEWS

■ **PCAnywhere** is under the gun in the remote control market, but it could stave off disaster thanks to a new version of the product. *Page 4*

■ Despite significant enhancements to **Borland**'s Interbase 4.0 database, questions loom as to whether the database will be overshadowed by Borland's recent pact with Sybase to integrate the firms' products. *Page 6*

■ **3Com unveils technology** that will allow users to run multimedia applications over their existing Ethernet backbones without requiring any changes to their desktops. *Page 8*

■ The **Open Software Foundation** is ready to launch an enhanced version of its Distributed Computing Environment (DCE) this week — with the intention of turning many DCE pilot projects and development projects into full-fledged production applications. *Page 10*

■ A new South African **computer virus** strikes San Diego County. *Page 12*

■ **Digital** will turn out a bunch of desktop machines, including workstations, PCs and a new device that is both PC and terminal emulator. *Page 12*

COMPUTER INDUSTRY

■ **Cisco surprised industry pundits** last week when it outbid IBM for switch vendor Kalpana. *Page 32*

DESKTOP COMPUTING

■ A test-drive shows that **Lotus' SmartSuite 3.0** offers the best integration in the suite wars. *Page 48*

WORKGROUP COMPUTING

■ **Unix workstations** are playing a role in keeping the Golden Gate Bridge from falling down when the next earthquake hits. *Page 51*

ENTERPRISE NETWORKING

■ Users are clamoring for vendors to develop **intelligent network and systems management tools** that can log and correlate events from one end of an enterprise network to another. But users will have to be content with localized tools until vendors figure out how to extend them across the enterprise. *Page 59*

LARGE SYSTEMS

■ The **IBM System/36** is being brought back to life to test new RISC technology and packaged pricing that will be infused into the AS/400 line next year. *Page 65*

APPLICATION DEVELOPMENT

■ Developing **wireless applications** requires some tricks, but it also yields some treats. *Page 71*

MANAGEMENT

■ Book review: Longtime CIO **Paul Strassmann** pens a candid new book, *The Politics of Information Management*. *Page 88*

CAREERS

■ With a more business-focused IS organization in mind, **West Coast Energy, Inc.**'s Greg Feltmate helps guide the IS staff into new roles while migrating off the mainframe. *Page 99*

MARKETPLACE

■ Being able to correlate cost with usage will help you negotiate better **discounts in client/server software**. *Page 111*

COMMENTARY

■ **Charles Babcock** finds that quality improvements at the PC level have an upstream impact on mainframes. *Page 6*

■ **Jeffrey Henning** says suites are winning over more of the best-of-breed loyalists. *Page 48*

■ **Elisabeth Horwitt** says Novell needs to integrate, not challenge, Microsoft's Windows NT. *Page 60*

■ After all these years, IS is still attempting to link the corporation with its customers, **Bill Laberis** says. *Page 36*

■ Today's CIO bears a striking resemblance to classic fictional detectives, **Thornton May** says. *Page 37*

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Executive Briefing

Vendor client/server strategies are coming together as some players promise a new generation of applications without pain. *Page 2* One IS manager who was critical of IBM's client/server approach in the past says the company is making a comeback with a well-defined plan. *Page 37* What once would have seemed an odd pairing makes sense today to Unisys and PeopleSoft and is a key component of the Unisys client/server strategy. *Page 51* The HP 3000 continues to move into the client/server era as third-party products give the venerable system a Windows front end. *Page 69*

The value of technology investments can be demonstrated, but the best way for CIOs to make their case is to focus on what IS investments bring to business strategy, not just traditional return-on-investment measures. The final part in our series, Demonstrating the Value of Technology, looks at methods used at Corning, Inc. and the U.S. Department of Defense to show how information technology adds up. *Page 76*

Novell is rolling out new LAN client technology with an advanced user interface, among other features. *Cover 1* Meanwhile, Novell's twice-delayed UnixWare 2.0 SMP server, which was expected Nov. 1, is being put off again until early next year. The company seeks to reposition the product as an industrial-strength application server. *Page 14* Novell faces a huge challenge in integrating all the groupware applications it has purchased while simultaneously cleaning up its operating systems mess. It began this week by introducing a new version of MHS that helps span certain incompatibilities between NetWare 3.x and 4.x. *Page 14*

Borland addresses key problems in Object Linking and Embedding development with an upgrade to the company's C++ development environment and compiler. *Page 7* Intersolv prepares to announce one of the first sets of connectivity products based on the latest Open Database Connectivity 2.0 specification. *Page 75*

More on-ramps to the information highway surfaced last week. Politicians are tripping over themselves to get on the 'net, and General Electric provides its customers with electronic access. *Cover 1 and page 61* Also, news junkies can now access the latest news via a new Intel/CNN service that brings live, around-the-clock news coverage to corporate desktops. *Page 20*

The 5th Wave *by* Rich Tennant

Customization tools may end headaches

Client/server application providers promise products that could prevent modification problems

By Rosemary Cafasso

The unwritten rule when it comes to packaged application code is this: Mess with it and you pay dearly — one way or another.

But a number of client/server applications providers hope to rewrite that rule. The approach: Customization tool sets that will let users tweak their software without creating major problems for future support and software upgrades.

Within weeks, Dun & Bradstreet Software will introduce StreamBuilder, a tool set based on Powersoft Corp.'s PowerBuilder that allows users to customize D&B Software's SmartStream applications, company officials confirmed last week. StreamBuilder will include a migration aid to automatically flag customization changes in current versions and compare them with a new release of SmartStream so users can better manage the upgrade.

Tools for tinkering

Company	Tool set	Availability	Price
SQL Financials	Workbench	First half of 1995	$50,000*
Dun & Bradstreet	StreamBuilder	November	$20,000
SAP AG	Abap/4 Development Workbench	Now	$50,000

*Company's approximation (Company has not finalized pricing)

Making it easy

In addition, SQL Financials, Inc. last week said it is developing a tool set called Workbench based on Gupta Corp.'s SQLWindows. Workbench will include editors to manage modifications and automatically roll them into new releases. SQL Financials President Joe McCall said the software is scheduled for release in the first half of next year.

The catch is that these tools will not be free and are specialized for the application environment. But in both cases, the idea is to end the modification woes many information systems shops experience when tailoring a packaged application.

In the past, changes made to high-end software involved long, tedious and often expensive tracking processes. Without such careful procedures, IS shops faced disaster when it came time to upgrade because the customized software would barely resemble the vendor's original product. Worse, a user could not get support from the software provider for all the changed portions of the application.

Several IS managers contacted last week said they have so many scars from customization problems that they maintain a no-modification policy in their shops to this day.

"Some experiences stay with you for a lifetime," said Jack Spurgeon, vice president and director of the systems and computer services division at Eastman Chemical Co.

Spurgeon recalled the days when application vendors shipped source code that required modification. But without any automated procedures to track a programmer's work, "these changes could bring your shop to its knees," he said.

Client/server woes

As IS shops move into the client/server era, the challenge for application vendors "is to see if they can keep the cost of ownership from exploding as their first sets of users — who have been customizing — now begin to migrate to new releases," said Jeff Comport, an analyst at Gartner Group, Inc. in Stamford, Conn. "There aren't lots of controls."

The upcoming product releases from D&B Software and SQL Financials are accelerating the trend started by companies such as PeopleSoft, Inc., which has been offering upgrade management functions in its PeopleTools since 1990. In addition, companies such as IMRS Co. have built client/server software that essentially isolates the core application code as objects and provides tool sets so users make changes without getting near the core code.

While some IS managers are warming to the idea that client/server application code can be tweaked without dire consequences, others said they are not yet comfortable with that notion.

"If we did customization, then we would have to redo our customization" when we upgraded, said Keith Minaker, corporate comptroller at United Grain Growers Ltd. "As a general practice, we won't do it."

Looking good

However, some users are seeing promise in these tool sets. John Christopherson, director of IS planning and financial systems at United Healthcare Corp., is beta-testing StreamBuilder. The tool kit helps his staff "extend the functionality of the base system without disrupting the base system," he said.

"We don't have to worry about regression testing or blowing our maintenance contract," Christopherson added.

And other users say the tools will at least be worth a try.

Joe Strathern, coordinator of information technology integration at Trimac Transportation Services Ltd., has made some changes to a SQL Financials application and now says the Workbench tool set should make his life easier.

The changes "were very difficult to maintain, and it meant we were usually between two to six months behind new releases because we had to reimplement our changes," he said. "So we think [Workbench] could really be a big time-saver, and it would end up as a cost-saver as well."

Santa Klaus

SAP America, Inc. President Klaus Besier confirmed last week that the company will unbundle its Abap/4 language and development tool set from the R/3 client/server application suite and sell it as a separate product. SAP AG, the parent firm, already started selling Abap. Separately, Besier said it will likely be mid-1995 before the U.S. division makes a big push for the client/server tools market.

Glitches in OS/2 Warp may dampen IBM's client/server future

By Ed Scannell

Just as it stepped onto the battlefield for what could be its last stand with OS/2, IBM stumbled again last week when it had to briefly halt production of OS/2 Warp to fix a small but nasty bug.

The technical snag, which IBM officials claim has already been fixed, will cause a week's delay in the product's reaching retailers' shelves. Warp was expected to be commercially available by Oct. 28 but will now be available Nov. 4.

Not very helpful

While the snafu in and of itself should not measurably impact the product's chances, according to most users and analysts, it is not the sort of publicity IBM needs as Microsoft Corp. cranks up its marketing machine for its next Windows release, Windows 95.

"While they may have fixed this problem, it sort of makes you wonder what else might have slipped by them and [will] be in next week's papers," said John Handy, a senior technical consultant at a large utility in Gaithersburg, Md.

The technical difficulty, discovered after the company had sent the product to manufacturing, centers around the presence of a CONFIG.BAK file in the root directory of some computers.

The problem causes Warp to take a backup copy of a DOS CONFIG.SYS file and merge it with Warp's CONFIG.SYS file. This prevents users from running DOS and Windows applications — a capability that IBM has perpetually promoted about OS/2.

Not many

IBM officials claim that only a few flawed copies of the shrink-wrapped versions of OS/2 Warp made it to retailers' shelves.

"This would have impacted only about 6% of all potential users, but we decided to pull it back and fix it now rather than later," said Wally Casey, marketing director at IBM's Personal Software Products group in Austin, Texas.

However, several analysts said this latest glitch may be the least of IBM's problems with OS/2. While IBM has made OS/2 Warp attractive to a broader range of users, those improvements are not enough to keep it dry in the face of the tidal wave they expect Windows 95 to be.

Others agreed, adding that IBM has blown an opportunity to gain market share against Microsoft — which suffered delays delivering Windows NT and Windows 95 — largely by not clearly articulating its OS/2-based client/server strategy.

"What [IBM has] made from a marketing standpoint is a dog's breakfast of things, made up of different markets and technologies," said Richard Buchanan, a software analyst at Forrester Research, Inc., a market research firm in Cambridge, Mass.

While some IBM executives acknowledge that they could have done a better job explaining their OS/2 client/server strategy, they still believe that by mid-1995 IBM will have delivered a more compelling set of products than Microsoft.

"Our plan was [to] deliver Warp to the broad base of customers first, and then extend it [with LAN Client and OS/2-LAN Server] to corporations where its real strength is," Casey said.

Damaging report

But in a report on server operating systems to be released shortly, Forrester Research analysts talked with users from 50 Fortune 1,000 companies, and only one firm was planning to standardize on OS/2 by 1996.

"We are putting a fork in [the server version] of OS/2. We think its lack of acceptance will also impact sales of OS/2 on the desktop," Buchanan said.

But not everyone's outlook on the company's chances to establish a meaningful presence for OS/2 in the client/server market is so bleak.

"IBM still owns the core of computing in most large organizations, a place where Microsoft is an unproven outsider and has little penetration into the industrial-strength systems zone," said Will Zachmann, president of Canopus Research, Inc. in Duxbury, Mass.

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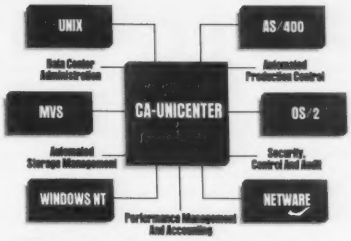

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New PCAnywhere may fix user gripes

By Michael Fitzgerald

Symantec Corp.'s PCAnywhere rules the roost in remote access software, but the competition has it squawking like a rooster with its tail feathers pulled.

The remote access/remote control market is drawing significant competition from a variety of new vendors, and PCAnywhere is clearly threatened, based on recent user and analyst interviews.

But Symantec may keep its competition at bay when it starts shipping Version 2.0 of PCAnywhere for Windows on Nov. 14. The new product, which costs $129 new or $49.95 for an upgrade ($59.95 to upgrade from a DOS version), addresses a number of user complaints that have cost Symantec at least one major customer, Entergy Services Co.

"We won't even look at" the new version, said Duane Rochelle, an information technology engineer at Entergy in Gretna, La. Rochelle said he was happy with a PCAnywhere competitor, Ocean Isle, Inc.'s Reach Out. Rochelle started looking for an alternative after he was told there would be no update to PCAnywhere for Windows 1.0 (see story page 41). He speculated that Symantec was introducing Version 2.0 because of the influx of competitors, including Traveling Software, Inc.'s LapLink for Windows.

While beta testers liked 2.0, some had come close to leaving Symantec behind because of its seeming refusal to fix bugs in the first version, which shipped in March.

"I can totally understand [Rochelle's] frustration — I heard the same thing [about there being no more updates to 1.01], and at that point there was no new release in sight," said Gene Friedman, a data communications manager at a large New York-based multinational bank. "I was getting ready to call [Symantec Chairman Gordon] Eubanks and ask him what the hell was going on. A year after the in-line [1.01] release, the same bugs I've been reporting for a year and a half are still in the product."

PCAnywhere for Windows 2.0 features include the following:

- Does not replace SYSTEM.INI files or act as a terminate-and-stay resident file
- TCP/IP support
- Has Windows 95 support, including long file name and OLE 2.0 support
- Up to 25% faster than before
- Support for 1,280- by 1,280-pixel resolution and 256 colors
- Includes Norton Assistant, an interactive tutorial

In denial

Friedman said at one point a Symantec technical support representative told him there were no bugs in the product, despite the fact that Friedman had compiled a list of some 30 bugs.

Friedman's department has 500 users with PCAnywhere, and he said if it had not been for a series of complex scripting templates he had written for his users, he would probably have abandoned the product as well.

"Symantec's support has typically been terrible," agreed an information systems manager at another beta site, who asked not to be named. "If you go through normal tech support, they're not informed about things. I got through to the product manager and asked if the product was dead and should I just switch to Reach Out, and that's what got the guy to tell me they were coming out with an upgrade."

Joseph L. Licari, a Symantec senior product manager, acknowledged that the company has "certainly heard a lot" of complaints about the length of time between the 1.01 update and 2.0's release. He said Symantec had intended to ship Version 2.0 in March but had delayed it to add features based on information from Microsoft Corp. about Windows 95, the next version of Windows.

As for why customers had not been informed of this, "there's not an easy answer for that," Licari said.

Beta testers said PCAnywhere 2.0 does address most of their complaints with the product, and it also addresses Rochelle's main concerns.

"We'll upgrade to 2.0, although I'm dissatisfied with the company," Friedman said. "It'd be a big effort for us to convert from PCAnywhere. I'd rather not have to." He added, "Symantec needs to get its act together in terms of customer and technical support."

AT&T GIS dives into vertical markets

Warehouse-like system anchors sales applications

By Mary Brandel

It was a month before Christmas, and retailers were stocking up on the hottest gift items.

But Trevor Dukes, systems development manager at $3.6 billion retailer W. H. Smith Ltd. in Swindon, England, could not believe his eyes. The retail system he had just implemented was showing a rapid decline in computer game sales.

"People asked, 'Are you sure this thing is working?' But it was absolutely accurate," Dukes said.

The next week, the retailer canceled orders for the games and later held a giant sale. "In the middle of January, everybody was trying to unload stock, and we were relatively clean," Dukes said.

Wouldn't every retailer want such a system? That is what AT&T Global Information Solutions is hoping with its announcement last week of the Enterprise Information Factory (see box above), a data warehouse-like system that is the technology underpinning for four sales and marketing solutions aimed at retail, banking, telecommunications and consumer goods manufacturing.

The Enterprise Information Factory includes the following:

- Tools for data access, data transformation and data discovery
- AT&T's Top End transaction monitor to allow many requests to be handled quickly
- AT&T's OneVision Network Management Solutions for a single point of control
- AT&T's messaging, including voice messaging, workflow and query by mail
- AT&T's 3400, 3500; 3600 massively parallel systems; and the System 3000 symmetrical multiprocessors
- Informix Corp., Oracle Corp., Sybase, Inc. or Teradata database

Since its purchase of Teradata, AT&T GIS has established itself in retail circles for the massively parallel, terabyte-size data warehouses it built for Wal-Mart Stores, Inc. and Kmart Corp. Now it hopes to market such systems in a somewhat smaller, more packaged form.

"All companies will build [data warehouses] in the next five years," said Peter Kastner, an analyst at Aberdeen Group in Boston. "But until AT&T's announcement ... customers had to select and buy multiple technologies and then build the applications, which are not trivial."

The Enterprise Information Factory is not exactly a data warehouse. Most data warehouses pull in data from a separate operational system, while AT&T GIS combines the two, enabling users to access and use information from the same logical database.

Not all users will want to combine the two. "Our operational system is read/write, so we have to build in quite considerable data integrity checks," Dukes said. Such integrity is not necessary in the decision-support system, as long as it is kept separate.

Users should also be warned that this is no off-the-shelf package. According to Angie McGuire, vice president of strategic marketing, "70% is off-the-shelf, and 30% will have to be customized."

In addition, the degree of up-front consulting work required will depend on the company's starting point.

AT&T GIS claims that implementation takes 90 days, as opposed to the 12 to 18 months required by a highly customized solution. But McGuire said that time frame is only if the customer already has a data warehouse in place.

Who will do the integration is another issue. AT&T GIS' 525 customer-focused teams "will concentrate on the very large companies," McGuire said. Precise time frames and costs are not known because while many customers, including W. H. Smith, have used components of AT&T GIS' announced offering, no one has yet tried the packages. Base prices range broadly from $250,000 to $5 million.

Putting the warehouse in order

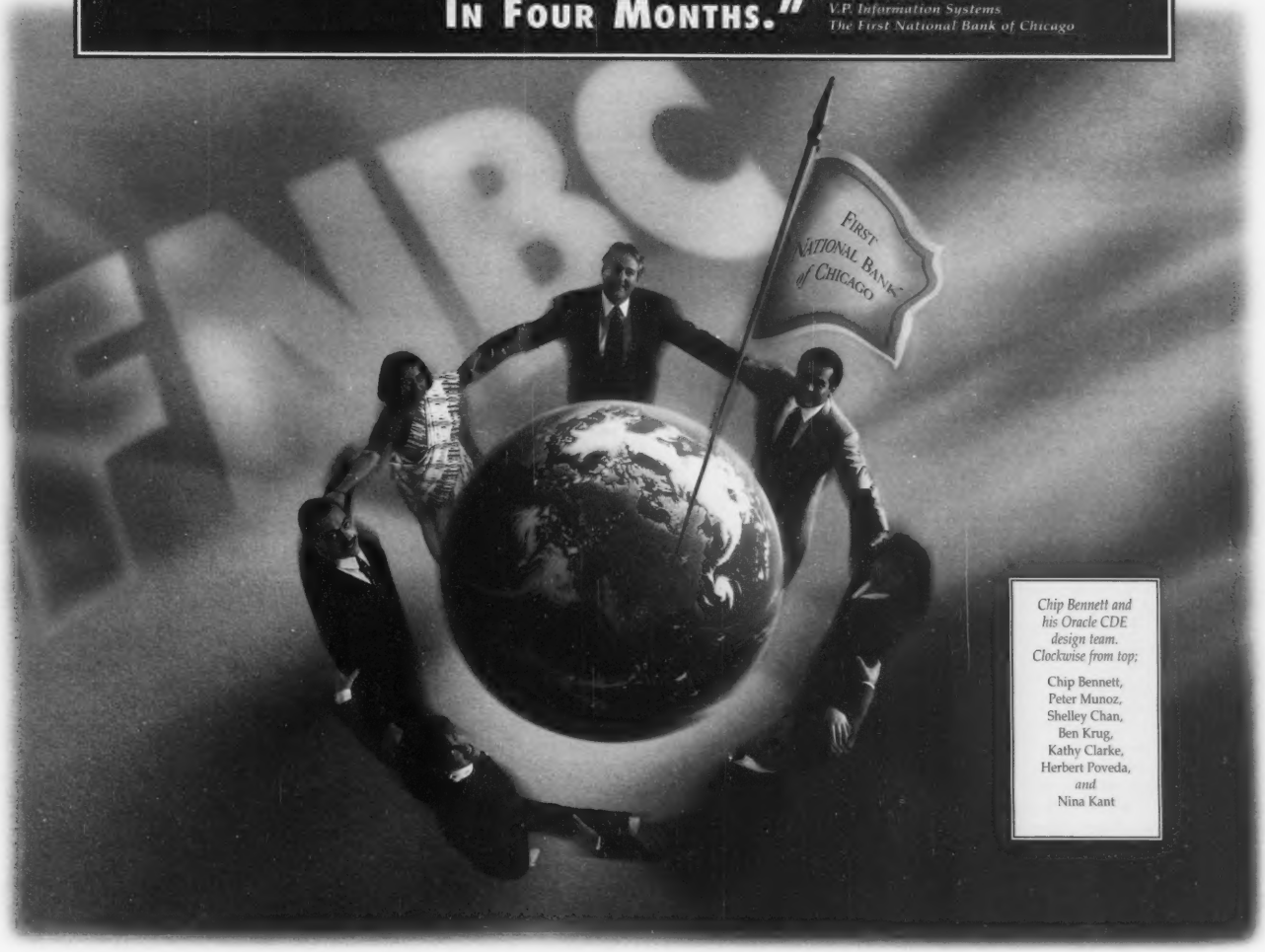
This week's data warehousing show in Phoenix will be the site of several announcements, including the following:

- **Red Brick Systems** plans to announce tomorrow an upgrade to its namesake data warehouse, designed to handle up to 500G bytes of data. Red Brick VPT also adds support for symmetrical multiprocessing features such as parallel joins and scans. The product is due to ship before year's end and will be priced from $70,000 to approximately $500,000.
- **Brio Technology, Inc.** is expected to ship this week BrioQuery, a desktop database query and reporting utility with some analysis functions. It includes native support for databases from Microsoft Corp., Oracle Corp., Red Brick and Sybase, Inc.
- **Sybase** last week confirmed a report from Aaron Zornes, an analyst at Meta Group, Inc. in Burlingame, Calif., that it will soon announce plans to acquire Expressway Technologies, a Boston-based maker of database add-ons intended to speed up read-only queries that are often used in warehousing applications.
- **Software AG of North America, Inc.** will announce this week the Open Data Warehouse Initiative, a plan to cover most of the warehousing bases by selling either its own tools or reselling and supporting other companies' products. For example, it will offer its Esperant data query tool as part of its warehousing effort as well as tools such as Carleton Corp.'s Passport, a data extraction and cleanup facility.

—Kim S. Nash and Rosemary Cafasso

"With Oracle CDE We Built A Worldwide System In Four Months."

Chip Bennett
V.P. Information Systems
The First National Bank of Chicago



Chip Bennett and his Oracle CDE design team. Clockwise from top;

Chip Bennett,
Peter Munoz,
Shelley Chan,
Ben Krug,
Kathy Clarke,
Herbert Poveda,
and
Nina Kant

WHY THIS MAJOR BANK CHOSE ORACLE CDE FOR WORLDWIDE APPLICATIONS DEVELOPMENT.

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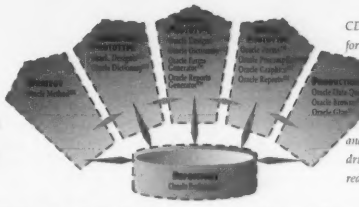

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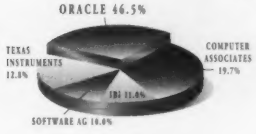

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ORACLE

Extending the PC revolution

One undervalued aspect of the PC revolution is the gain in quality of parts produced in the millions for low-cost desktop systems. Standard 5¼-in. and 3½-in. disks, configured in redundant arrays, have replaced slower, larger, more expensive disks, now derisively referred to as Sleds, even though the latter once maintained an edge in high reliability.

In the process, what used to be three classes of storage has collapsed into two, and the company that has taken greatest advantage of this realignment, EMC Corp. in Hopkinton, Mass., is now challenging IBM for pre-eminence in a field that IBM invented: mainframe storage.

So if you own a 14-in. mainframe disk drive, hang onto it. You may have a museum piece. "By next year, all Sleds will be dead," says Nick Allen, a storage analyst at Gartner Group, and 5¼-in. drives will be the largest drives still in production.

When they first appeared, 5¼-in. hard drives had a mean time between failure of 40,000 hours, passable for the desktop but inadequate for mainframe storage, where highly engineered and high-priced drives yielded an average of 1 million hours or 114 years of operation before failure.

A qualitative difference still remains between mainframe and desktop classes, but much of its significance has faded. The 5¼-in. drives have been rapidly improved by Seagate, Connor, Quantum and other manufacturers to the point that they now offer a mean time between failure rate of 500,000 hours or 57 years. And the low prices of these drives lets them be configured into arrays that allow each device to be backed up by another.

If you own a 14-in. mainframe disk drive, hang onto it. You may have a museum piece.

Charles Babcock

So those mainframe managers who see the PC revolution as a set of changes affecting only end users should take note. The qualitative differences that once existed between the PC and host are now more illusion than reality. Quality is being built into mass-produced PC components. And once the qualitative difference shrinks to a certain level, it can be overcome by arranging the low-cost components in self-reinforcing formats. At the end of the day, it is the combination of price and performance that matters most, not just one or the other.

These changes are evident even to IBM, but smaller and younger firms have seized on what they mean more quickly. What used to be three tiers of storage — mainframe, midrange and desktop — each with its own class of devices, is now two, with large systems served by RAID configurations of the desktop device, Allen noted.

EMC, which started out as a memory board supplier in 1979, had only 1% of the mainframe storage market in 1991. By the end of last year, its RAID devices were garnering 16.8%, and by the end of this year, it is expected to command 30.4%, predicts Dave Vellante, an analyst at International Data Corp. These figures compare with IBM's precipitous decline from a percentage in the high 70s three years ago to 36% by the end of this year. In the process, EMC will move from a noncontender into second place at the end of this year.

EMC loaded a standard 5¼-in. disk array with speedy front-end cache in the form of 2.5G bytes of memory chips. Data is loaded into cache, depending on some most frequently accessed data routines that were embellished by EMC engineers. For example, the data in cache is indexed for quick retrieval, as in a relational database, rather than relying on clumsier, binary tree searches.

If 12 tracks of data have been loaded into cache and one track has been called to the host, the EMC subsystem knows to reload the cache with another track of data. Such techniques yield high hit rates for responding to calls for data from cache.

By adding value to the components of the PC revolution, a few firms are extending it beyond its early desktop range. And if the basic components keep gaining in quality, there will be no place to hide for more expensive approaches.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

Interbase upgrade to ship

Database's success could suffer from overlap with Sybase

By Kim S. Nash

Borland International, Inc. confirmed last week it plans to ship a major upgrade to its Interbase database next month. The move puts the product in league — at least functionally — with more established relational databases such as those from Oracle Corp. and Sybase, Inc.

But while Borland will continue to position Interbase as the database of choice for Paradox and dBase upsizers, the product may become a second-class citizen given Borland's recent pact with Sybase, observers said. That agreement calls for integrating its products with Sybase's popular SQL Server database.

Loss leader

Borland plans to bundle a 16-bit Windows 3.1 version of Interbase with its forthcoming Delphi95 development tools. When the time comes to deploy Delphi-built applications, Borland hopes users will buy the full 32-bit edition of Interbase.

Holding back

Moreover, Interbase's solid technology is hampered by weak marketing, said Regan Coleman, a senior consultant at Context Integration, Inc. in Emeryville, Calif. The popularity of Interbase "is nothing like it could have been if Borland had done the marketing at the right time," he added.

The combination of a Sybase back end and a Borland Paradox or dBase front end is already established at many shops, and that throws another shadow over Interbase, Coleman said. Five of his 10 clients run Paradox against Sybase SQL Server, he added.

"The main overlap for Sybase and Interbase is at the workgroup level," conceded Rod Lehman, group product marketing manager for Borland's client/server business unit.

But working in Interbase's favor is its smaller footprint and the likelihood that Borland tools, including Delphi95, will be more closely integrated with Interbase than with Sybase's product, he said.

Interbase 4.0, which is being tested at 250 sites worldwide, contains several new features. They include the following:

- Support for triggers, stored procedures and referential integrity.
- Graphical systems administration tools for security, backup and recovery routines.
- Client/Server Express, a set of interfaces that directly link Borland's single-user Paradox and dBase products to Interbase.

Users will also be able to copy and distribute those features to as many PCs as they want for free, Lehman said.

Interbase 4.0 beta testers said they were impressed and waved off Borland's uncertain financial state.

"We figured that if someone bought Borland out, Interbase would continue to be a supported product — by someone," said Michael Bonner, a transit programmer/analyst at Fresno Area Express, the transportation department for the city of Fresno, Calif.

The group has moved three applications off a Prime Computer, Inc. minicomputer to Interbase running on a Compaq Computer Corp. SystemPro XL server on a Novell, Inc. NetWare LAN.

Interbase 4.0 costs $795 for a two-user version, $2,495 for 10 users and $9,995 for unlimited users.

Intersolv announces ODBC 2.0 compatibility. See page 75.

Oracle slapped with lawsuit

By Kim S. Nash

SAN MATEO, CALIF.

A $30 million lawsuit filed here last week charges Oracle Corp. and Larry Ellison, president and chief executive officer, with wrongful firing, breach of contract and other misdeeds described as "a conflict of interests" between Ellison's personal investments and his database company.

The suit, filed by Terry Garnett, former senior vice president of worldwide marketing at Oracle, also alleges that Ellison asked him to channel interactive television business to a new company, Human Nature Interactive, Inc., while Garnett was trying to drum up the same kinds of deals for Oracle. Garnett was fired for questioning the legality of that request, the suit claims.

Whose idea was it?

An Oracle spokesman countered that Garnett proposed the Human Nature start-up idea to Ellison. Further, "neither Mr. Ellison nor Oracle ever made assurances that implied or promised either Mr. Ellison's or Oracle Corp.'s cooperation" in Human Nature, he said.

Oracle fired Garnett, a four-year Oracle veteran, on Aug. 15.

"Oracle will fight the suit, of course," a company spokesman said, adding that neither Ellison nor Oracle lawyers were available for comment.

Garnett was also unavailable for comment last week.

Bob Kim, an analyst at New York brokerage house S. G. Warburg & Co., shrugged off the suit. The complaint "is not a major thing, at least not right now," Kim said. "Oracle's been on a roll, and it seems like they're a target for lawsuits because of it."

Indeed, at least 23 suits have been filed against Oracle and/or Ellison in the past two years, according to records from the San Mateo clerk's office.

Garnett's suit seeks $30 million for punitive and compensatory damages, loss of salary, stock options and benefits. Oracle maintains that it has "met the terms of his employment contract completely," the spokesman said.

Borland's C++ tool eases OLE migration

By Melinda-Carol Ballou

Borland International, Inc. will up the ante in the competitive C++ development arena this week by paving the way for smoother development of Object Linking and Embedding (OLE) applications when it announces Version 4.5 of its C++ tools and compiler.

Most critical with C++ 4.5 are capabilities that will enable corporate developers to more easily create applications supporting Microsoft Corp.'s OLE standard, according to Borland officials. Lack of such support has stalled application migration to OLE, industry analysts said.

Pricing game

Borland C++ 4.5 will ship next month for $499.95; current users can upgrade for $149.95. Users of other Borland products or competing C++ products can buy the product for $199.95. This price includes two updates, one due out in February and the second when Windows 95 ships.

OLE is Microsoft's standard for managing and controlling applications and a requirement for developers seeking to run their applications under future Microsoft operating systems, such as Windows 95, the next version of Windows, or Cairo.

Version 4.5 allows users to take multiple operations required at the OLE application programming interface level and combine them so the developer only has to make single requests, said Hank Schiffman, C++ product manager at Borland.

Borland's C++ 4.5 does this by offering a layer of code that sits on top of OLE's Common Object Model (COM) and creates mappings to COM. The tools handle application requests to COM and let objects be passed around without requiring the developer to write difficult code.

Oh, what a relief it is

Several corporate developers last week spoke positively about the potential relief such tools could bring.

"Right now it's very difficult to make an OLE application," said Larry Harris, technical manager of systems at Quick Corp. America, a New York-based data company. "If this works as advertised, it would allow you to make applications more quickly with greater stability."

Separately, Microsoft this week will announce additional platform support for its Visual C++ tools, and Symantec Corp. is readying an upgrade to its C++ line. Earlier this fall, Microsoft announced Visual C++ support for OLE automation servers and the ability to generate Dynamic Link Libraries through Visual C++'s AppWizard to facilitate OLE development. It does not provide the macros and mappings offered by Borland to simplify OLE development.

While Microsoft has its own strict agenda to follow in terms of OLE, Borland is "out-Microsofting Microsoft" with the flexibility and range of its OLE support, said Paul Cubbage, a director at Dataquest, Inc. in San Jose, Calif.

Also in C++ 4.5, Borland offers Object Components Framework (OCF), a C++ class library that lets developers easily add OLE support to 16-bit applications, Borland officials said.

OCF abstracts the coding process to a much higher level, Schiffman said. Instead of writing dozens of lines of OLE code, developers use OCF macros, which require only two or three lines of code, to gain OLE support. OCF works in conjunction with Microsoft Foundation Classes or Borland's Object Windows Library.

The Borland tools also deal with another headache. In order to use features such as OLE automation, developers have to restructure Windows applications to receive requests from COM and Windows. Borland's tools handle the COM requests coming to the application and translate them into Windows events, so developers can retain the existing structure of their Windows applications.

Software AG adds objects to Natural. See page 72.

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News Shorts

Lotus delivers Notes 4 developer's kit

Lotus Development Corp. delivered last week a Notes 4.0 developer's kit — the first time Lotus has given corporate and third-party developers access to Notes code months before the final product ships. Notes 4.0 will be available in mid-1995 at the earliest.

Novell gateways into mainframes

Novell, Inc. introduced gateway software based on an ISO protocol that allows its Unix-based Tuxedo transaction monitor to interoperate with mainframe monitors made by Unisys Corp., Groupe Bull, ICL PLC and Siemens/Nixdorf Informationssysteme AG. Novell also plans support for two-phase commit between Tuxedo and IBM's CICS.

Microsoft to broadcast own show

Microsoft Corp. will begin bimonthly, hour-long satellite broadcasts of technical and strategic information to 1,600 customer sites next month. Microsoft TV will be free to users and will occur on the first and third Tuesdays of the month. Separately, the company said it will include technology in Windows 95, its next version of Windows, that lets users quickly transfer files between a desktop computer and a laptop PC without purchasing a special data transfer product.

Reuters division delivers object kit

Reuters Teknekron Software Systems plans this week to launch Enterprise Toolkit, development software designed to create distributed objects for heterogeneous environments. Teknekron's offerings include a platform-independent object request broker and a middleware layer.

Tektronix X terminal combines NT, Unix

Tektronix, Inc. is expected to announce this week a Windows-compatible software package for X Window System terminals that will combine displays of Microsoft Windows NT and Unix server applications on the same user screen. The company aims to push into commercial sites, countering rivals' PC X software offerings, industry analysts said last week.

Investment firm acquires Ziff-Davis

In a deal expected to close by year's end, **Forstmann Little & Co.**, a private New York investment firm, said last week it will acquire **Ziff-Davis Publishing Co.** for $1.4 billion. Ziff-Davis, which publishes *PC Week* and other computer titles, said it will continue to be based in New York and run by the current management team, including Chairman Eric Hippeau. The sale does not include its trade show business, Interchange Network company or Information Access company.

SHORT TAKES **Macromedia** announced last week that it will acquire **Altsys Corp.** in Richardson, Texas. Altsys develops FreeHand, an illustration and design program. . . . **Boston Technology** released AccessMax, a tool for developing networked voice and multimedia applications. . . . **Sun Microsystems Computer Corp.** said last week it is supporting global Integrated Services Digital Network (ISDN) standards with a new product line of SunISDN hardware and software. . . . **IBM** will license its microkernel technology to **Digital Equipment Corp.** for use in real-time and embedded applications. . . . Shunning the mergers and partnerships pursued by other cellular players, **BellSouth Corp.** last week said it would focus on its own region in the coming auctions for broadband personal communications services (PCS). It will join a consortium with the **Washington Post Co.** and a number of other companies to bid on a PCS license for the Carolina Major Trading Area.

Bay Networks lays out its game plan

By Stephen P. Klett Jr.
WALTHAM, MASS.

■ In an attempt to quell the user angst spawned by the July merger of SynOptics Communications, Inc. and Wellfleet Communications, Inc., the renamed Bay Networks, Inc. last week finally spelled out its long-awaited architecture. Details included some initial products said to help with the transition to tomorrow's high-speed networks.

The bicoastal company unveiled an umbrella strategy called Bay Networks' Switched Internetworking Services (BaySIS). Its charter is to provide the means for users to build flexible network infrastructures based on switching technologies that will support various classes of service, reduce management complexity and leverage existing investments.

In support of the strategy, the company rolled out the Access Node Router-Hub platform for remote offices and Optivity/Router Manager, an integrated hub/router management package. It also detailed plans to deliver LAN switching for the SynOptics 5000 hub, a Virtual Network Router interface for Wellfleet's Backbone Node router family and enterprise-wide management next year.

Observers said they like what they see but want more details on management. "This makes me feel comfortable with our decision to stick with Wellfleet and SynOptics," said John Dubiel, manager of planning and technology at Boston Edison. "I really see some future and life represented [in BaySIS] for our network."

"This is a reasonable statement of direction as to how customers can leverage their equipment into the switched world, which [Bay Networks] needed to make," said Valentin Sribar, program director at Meta Group, Inc. in Reston, Va.

Double trouble

But Sribar and other observers said Bay Networks' ability to effectively leverage the network management of both companies on a consistent basis across both their own and competitors' platforms was vital to the firm's success.

Analysts also cautioned that the need to coordinate delivery and development between the entities that make up Bay Networks could push the delivery of switching and virtual networking products six to 12 months behind those from competitors such as Cisco Systems, Inc., 3Com Corp. and Cabletron Systems, Inc.

Bay Networks believes it will be more competitive.

"Early adopters want to get into building virtual LANs as soon as possible. We're showing that, literally, Bay Networks will deliver the tools [needed] to make this happen in '95," said Paul Severino, chairman of Bay Networks, based in Santa Clara, Calif.

Either way, some users appear willing to wait for Bay Networks to deliver. "You have two strong companies so you should expect to see some culture shock, which may translate into some delay," said Lauren Moen, supervisor of telecommunications network services at 3M Co. in St. Paul, Minn. "Overall, we think this merger will work out well for us in the long run."

Dubiel said Bay Networks' rollout appears to be in line with Boston Edison's needs.

BaySIS will focus on delivering products with these services:

- **Transport services:** Move voice, video and data traffic through a switched internetwork.
- **Policy services:** Provide the network administrator with a logical view of a user's network access and restrictions in a virtual networking environment.
- **Operations services:** Allow networkwide monitoring and control of disparate platforms via enhanced integration of shared media hub, router and switch management.

The Access Node Router-Hub has 12 10Base-T Ethernet ports and two wide-area interfaces. Pricing starts at $3,345.

Optivity/Router Manager merges SynOptics' Optivity hub management software with Wellfleet's Site Manager router software and provides a common interface. It is available on CD-ROM for $5,995.

Grand Junction unveils hub. See page 60.

Multimedia at 3Com's PACE

By Stephen P. Klett Jr.
BOSTON

3Com Corp. last week unveiled switching technology designed to let users run real-time, multimedia network applications on unmodified Ethernet networks.

Priority Access Control Enabled (PACE) technology consists of silicon and software designed to be embedded in a port-switching Ethernet hub. PACE switches will be able to monitor LAN traffic and guarantee network access to high-priority traffic such as voice and video.

According to 3Com, PACE technology will eliminate the latency and jitter associated with typical Ethernet networks that lead to jerky video and audio fadeouts, making transmission of multimedia applications impractical. PACE users will not have to change their adapter cards and cabling structure.

"In terms of solving real problems with minimal disruption to networks, [3Com] does have a pretty good vision here," said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass. "There is no clear migration from Ethernet to high-speed networks, and if [3Com] can deliver this as promised, it will have a lot of appeal."

PACE makers

Out of the gate, the list of PACE technology supporters includes Oracle Corp., Starlight Networks, Novell, Inc., Apple Computer, Inc., Dell Computer Corp., Silicon Graphics, Inc. and Sun Microsystems, Inc.

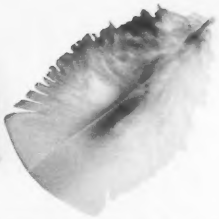
There are many other emerging network technologies that are being positioned to foster desktop multimedia applications such as videoconferencing. These include Isochronous Ethernet from National Semiconductor Corp. and 25M bit/sec. Asynchronous Transfer Mode (ATM) from IBM. But each of these requires users to at least replace their network adapter cards, and some require cabling upgrades as well.

PACE products are at least a year away. Analysts say their success depends on a large-scale shift to port-switched Ethernets; partnerships with other switching hub vendors; hitting promised prices of roughly $150 per switched port; and delivery of management software capable of handling hundreds of dedicated LAN segments.

Meanwhile, users, wary of ATM until standards are in better shape, were optimistic about the potential of PACE technology.

"We're scared of ATM right now, and [PACE] may save our bacon," said Barbara McKenzie, software manager at Thomas Jefferson University in Philadelphia. "This is another example of Ethernet's nine lives. . . . We think 10M bit/sec. will be enough bandwidth for most of our workstations for years."

Avalon White Paper



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Enhanced DCE aims at production apps

By Jean S. Bozman

The Open Software Foundation is expected this week to launch an enhanced version of its Distributed Computing Environment (DCE), with systems administration and security improvements intended to turn DCE pilot projects into full-fledged production applications.

DCE is a software technology that allows users to write distributed computing applications for mixed-vendor networks. DCE's modules provide unified services for file management, security and navigation through a client/server network. Users can link a variety of computer systems, including PCs, Unix servers, IBM mainframes and Digital Equipment Corp. VAXs into a single DCE network, or "cell."

Tom Willmott, a vice president at Aberdeen Group, a consulting firm in Boston, said DCE holds promise as a unified infrastructure for distributed computing, but it must be made more accessible to programmers to be widely used.

"Most users are relying on database and middleware technology or other third-party products to help them connect distributed locations," he said. "DCE is not bad as an infrastructure, but it will need some packaging in order to become a mass-market success."

The leading feature of the DCE 1.1 release is its consolidated systems administration, users and analysts said. Users will be able to use the same control program and scripting language to manage all DCE components — including naming, directory and security services.

The DCE 1.1 code is expected to arrive at user sites by early next year, OSF officials said.

Highlights of DCE 1.1

The following will be announced at an OSF user meeting this week:

- **Unified systems administration APIs**
- **Auditing features that track user log-ons and security**
- **DCE remote procedure calls optimized for high-speed networks**
- **A DCE daemon that manages remote DCE servers and security**
- **A new link between DCE's Distributed File Server and the widely used Network File System protocol**

The systems administration improvements are intended for users who plan large-scale applications. The four administrative programs, for example, "have been shrunk to one," said Tony Carrato, a consultant at Mile-High Information Services in Denver. "This release is an evolutionary way to clean it up."

Security is another key issue for large users who want to use DCE throughout their corporation but must connect multiple security systems. John Clyne, a software engineer at the National Center for Atmospheric Research in Boulder, Colo., is building a DCE application to manage on-line data storage. "They're going to consolidate that by providing a higher-level interface to DCE security management," he explained. "That's less code that we'll have to write."

DCE 1.1's security features will make it easier to hook proprietary security packages into a unified DCE system, said Mike Guidry, a technical adviser at Phillips Petroleum Co. in Bartlesville, Okla.

Phillips Petroleum plans to move some DCE production applications on-line by early 1995, Guidry said. Its first applications will involve small numbers of users on a secure network. The environment will consist of Windows clients and Unix servers, with IBM mainframes to be added later.

Despite DCE 1.1's improvements, some analysts say it faces an uphill battle. Key factors cited include difficulty in programming its 400-plus system calls and the small number of DCE tool kits.

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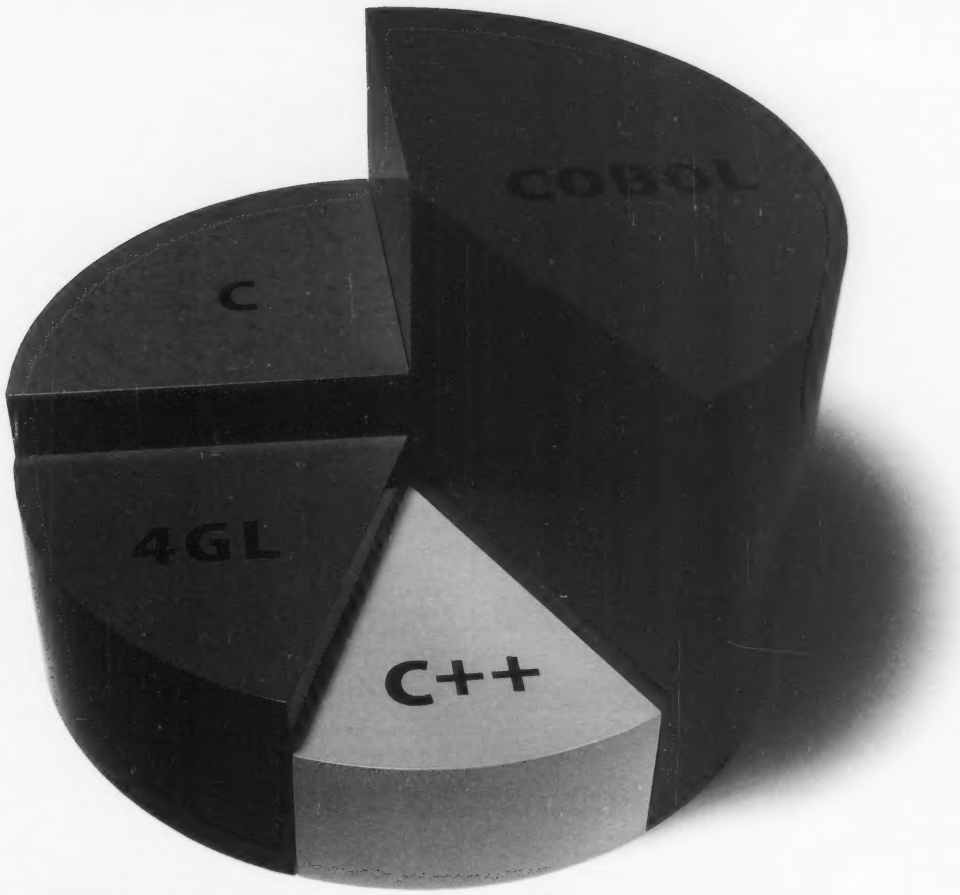

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Digital workstations gain speed with PCI bus

Desktop announcement continues company's PC revamp

By Mary Brandel

Digital Equipment Corp. will turn its attention to the desktop in the next few weeks as it announces new low-end PCs, revamps its workstation line and introduces a desktop system that acts like a PC, a terminal and a workstation in one.

Its three new Alpha AXP-based workstations, due out this week, will be the first in Digital's product line to include the Peripheral Component Interconnect (PCI) bus. Like the Alpha servers, also to be announced this week, the workstations will drop "DEC" from their nomenclature.

The models include a $10,000 166-MHz system, a $15,000 233-MHz box and a 233-MHz tower version, all based the EV-4 chip.

All of Digital's PCI-based servers and workstations are now called AlphaServers and AlphaStations.

Most workstation vendors have PCI systems in development, said Steve Kleynhans, an analyst at Meta Group, Inc. in Westport, Conn. Little wonder: PCI runs at four times the speed of the Extended Industry Standard Architecture (EISA) bus, he said.

Digital on the desktop

PC announcements this week include the following models:

PRODUCT	CHIP	CLOCK SPEED	PRICE
SLIMLINE VENTURA PCs:			
466	486DX2*	66-MHz	$1,299
560	PENTIUM	60-MHz	$1,799
FULL-PROFILE VENTURA PCs:			
4100	I486DX4	100-MHz	$1,899

* Advanced Micro Devices, Inc.

Need for speed

That kind of speed is important to Peter Evans, senior research associate at the University of Miami. However, Evans said he also needs the PCI interfaces and drivers to attach to the workstations. "We've been pushing DEC to provide us with a PCI ATM interface, but that's not going to be available at the earliest until their third quarter '95," he said.

Digital's PC announcement is a follow-on to the PC revamp it started in September with the midrange Celebris PCs. The eight low-end PCs — dubbed Ventura — replace the DECpc LPV+ and LPX+ Value Lines.

Like Celebris, these 486- and Pentium-based models feature a new naming strategy and incorporate a screwless chassis, a user-friendly start-up screen and Plug-and-Play capabilities.

The full-size models include PCMCIA slots and infrared ports that enable communication with notebooks. All the models include the Desktop Management Interface, which allows PCs to be reconfigured remotely.

Prices are competitive with those from Compaq Computer Corp., analysts said. But at least one analyst wondered why Digital would bother with the lowest-end boxes, the 33-MHz and 50-MHz 486SX2 machines.

"If you're going to have entry-level machines, [they] really need to be cheaper than" $1,079 and $1,099, said Jenni Ceurvels, a senior market analyst at BIS Strategic Decisions in Norwell, Mass.

For $200 more, she pointed out, users can get a 66-MHz 486DX2-based machine.

Those models are intended for "some fairly large accounts" that need to stick with entry-level configurations, said Ed Ellett, desktop product line manager at Digital.

Revenue builders

The low-end PCs are important to Digital's PC revenue. The company shipped 675,000 PCs this year, with 85% to 90% of them in the $1,000 to $2,000 price range. Digital said it expects shipments to double next year. High-end PCs in the new line will be announced in the first half of next year.

For users who want a PC that can access Unix and legacy applications, Digital confirmed it will announce its Multia MultiClient Desktop system next week.

Priced at $3,495 to $6,000, the Alpha-based desktop device runs Microsoft Corp.'s Windows NT applications locally but also bundles terminal emulators, integration software and multiple networking options for wider access.

The box is intended for users who need to communicate with a wide variety of platforms but want client-level rather than back-end integration.

Dexcon attendees check out their options. See page 65.

Voice and data services

Sprint alliance aims at AT&T/McCaw net

By Ellis Booker

Continuing the dance among communications giants last week, Sprint Corp. and three cable TV concerns announced a joint venture aimed at winning wired and wireless customers nationwide for voice and data services.

The alliance of Sprint, Tele-Communications, Inc. (TCI), Cox Enterprises, Inc. and Comcast Corp. also includes alternative access provider Teleport Communications Corp. Owned by several cable operators, Teleport would become the linchpin for entering local telephone markets, according to analysts. Teleport already has alternative access networks in 19 metropolitan markets.

Unfortunately . . .

So far, only six states allow competition for local telecommunications, meaning the Sprint/cable company alliance's fortunes await either a federal plan for deregulating the local loop or state-by-state action.

Analysts said the venture is clearly aimed at creating a company able to face the AT&T Corp./McCaw Cellular Communications, Inc. partnership and local telephone companies.

The local phone companies have tried unsuccessfully to make deals with the cable industry. Most notable was Bell Atlantic Corp.'s failed attempt to merge with TCI earlier this year.

First on their agenda, Sprint and its cable company partners will pool their resources to obtain one or more of the upcoming personal communications services (PCS) licenses to be auctioned by the Federal Communications Commission in December.

Down to the wire

The FCC's deadline for disclosing PCS partners was last Friday — a date that has spurred other deals.

"Clearly the deadline is what's causing this activity to happen at the rate it is," said Kurt King, an analyst at Montgomery Securities in San Francisco.

For instance, two weeks ago, Bell Mobile Services/Nynex Corp. and AirTouch Communications, Inc./US West, Inc. agreed to merge their wireless partnerships.

Unlike the Bell Atlantic/TCI situation, Sprint and its partners do not have the luxury of time to decide if they are a good strategic fix, King said. "These people don't have that. It is do or die," he said [CW, Oct 24].

The venture will be owned 40% by Sprint, 30% by TCI and 15% by Comcast and Cox. The partners said they would seek affiliations with additional cable companies to broaden the venture's reach.

Die Hard 2 virus attacks PC productivity

By Gary H. Anthes

A computer virus struck more than 100 networked PCs in the government of San Diego County last week, crippling the productivity of hundreds of users for several days.

"It got into our network and went through every server in the county administration center," said John Devore, manager of quality assurance for the county. "We have no idea how it got there."

The Die Hard 2 virus originated in the Republic of South Africa in July, according to Patricia Hoffman's HyperText VSUM directory based in Santa Clara, Calif. According to VSUM, the 4K-byte virus is a memory-resident, full-stealth virus that infects .COM and .EXE programs.

Officials at the National Computer Security Association in Carlisle, Pa., and the Computer Emergency Response Team at Carnegie Mellon University in Pittsburgh said they were unaware of other sites hit by the Die Hard 2 virus.

Devore said the LAN, which contains some 500 PCs and numerous servers, had many dial-in connections to outlying departments, one of which also seemed to be infected. He said he did not know of any data files that had been harmed, although that could not be determined with certainty.

Usefulness cut in half

Larry Salus, who heads the county's network management division, said 600 users were left without access to LAN-based office automation applications and information on mainframes. Some of these users were senior administrative personnel and elected officials, he said. The productivity of the users was probably cut by 50%, he added.

Productivity of the information systems staff was crippled as well. "There are 20 of us who have been doing double shifts since Monday evening," Devore said Thursday afternoon. At that point, the PCs had been cleansed, but the servers had not, he said.

When asked if the county used virus scanners on a regular basis, Devore said, "As of tomorrow we will."

He said the county used virus scanners religiously during the March 1992 Michelangelo virus scare. "Then it went by the wayside," he said. "We'll put the [scanners] in place this time, and that will protect the servers. Unfortunately, they will also slow down performance."

"We had identified the need for [scanners] some time ago, but in budget battles priorities get changed," Salus said. "Now this is a priority."

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Novell groupware in transit

By Lynda Radosevich

As part of its larger struggle to develop a coherent groupware strategy, Novell, Inc. last week introduced a patched-up version of its Global Message Handling System (MHS). It is said to help MHS run better across mixed NetWare 3.x and NetWare 4.x networks.

Novell's short-term goal is to promote Global MHS as an enterprise messaging engine that can service multiple brands of client software. For instance, the new software ships with drivers that let Microsoft Corp. Mail users access MHS for message delivery and directory synchronization.

Tying it all up

By late next year, Novell plans to integrate Global MHS and GroupWise — the messaging product formerly called WordPerfect Office — into an open, client/server platform for messaging and groupware applications.

In turn, that platform will be integrated with InForms electronic forms and SoftSolutions document management to form the Collaborative Computing Environment (CCE), which Novell announced last month. The CCE pieces are supposed to work well together or plug into other vendors' products while using NetWare Directory Services and other NetWare services.

But users and analysts contacted last week said CCE could be lost among the firm's parallel efforts to integrate its operating systems. Even if it avoids this, CCE lacks details and appears to be a hugely ambitious project, they said.

"Considering where Novell is and the work that it has to do to realign its operating systems with the realities of the marketplace, I don't know if getting the groupware systems straightened out at the same time is manageable," said Jamie Lewis, an analyst at the Burton Group in Salt Lake City.

On the way

Novell plans the following to address questions about Global MHS and GroupWise:

- Build MHS into NetWare 4.1, which is due in December. Through NetWare 4.1, MHS and GroupWise will share the same directory and common administration.
- On the workflow front, announce a strategy in the next several weeks that includes partnerships with Reach Software Corp. and FileNet Corp.
- Offer a client/server version of GroupWise, scheduled for October 1995 delivery, that will include a single interface for GroupWise, InForms and SoftSolutions. It will also include a common message store between GroupWise and MHS.

Top priorities

While opinions on what should be tackled first varied widely, some of the issues users and analysts said Novell should address include the following:

- With GroupWise perceived as a stronger player on the server side of the CCE integration strategy, Novell should clarify whether Global MHS is strategic and begin pointing MHS users to an upgrade path.
- On the applications side, Novell should provide better integration of GroupWise, SoftSolutions and InForms at the desktop level.
- The company should focus on value-added services such as workflow to leapfrog groupware competitors such as Microsoft and Lotus Development Corp.

"I see SoftSolutions as the biggest problem," said Gary Wilkerson, a supervisor of end-user services at NetWare site Kaiser Permanente Healthcare, Inc. in Atlanta. "The technology is there, but the [client portion] is not integrated into the [GroupWise] suite."

Novell said it is working on all fronts, adding that GroupWise and MHS are both strategic (see box).

By 1996, "there will be a new message-transport service that is backward-compatible to both GroupWise and MHS," said Phil Schacter, an MHS product manager. The new transport, based on x.400, will support SMF 71, an application programming interface (API) now used by many third-party MHS developers.

Stiff competition

David Marshak, an analyst at Patricia Seybold Group in Boston, said Novell should drop MHS and move more quickly to deliver a client/server messaging product based on GroupWise and industry-standard APIs. Otherwise, it will not stand to make much headway against Lotus and Microsoft, which have their own client/server messaging strategies well under way, he said.

But such a move would risk incurring the wrath of a large user base comprised of many small pockets of MHS users.

"It's too soon to write home about any of the [messaging products in the market], but I believe that MHS is a superior product" that should not be dropped, said Kenneth Orme, an information systems specialist at Unisys Corp. in Salt Lake City.

Novell needs to integrate NT, not fight it. See page 60.

IBM pulls host users into groupware

IBM is expected to roll out its groupware branding strategy at Fall/Comdex '94 and sketch a framework for existing groupware and new products.

The strategy is meant to entice mainframe office automation software users into deploying three-pronged systems based on IBM client, server and messaging backbone technologies.

Key to IBM's plans is the IBM Messaging Queuing (MQ) series. The MQ series provides an asynchronous message queuing feature that allows one system to query another without requiring it to be up and running. IBM said it will provide the backbone for integrating a forthcoming IBM client/server electronic-mail system, FlowMark workflow manager, Visual Document Library document manager and Time and Place/2 calendaring software.

IBM's E-mail product, which an IBM official outlined last July, is based on the IBM AnyMail server and UltiMail client. The E-mail line will run on OS/2 or OS/400 early next year and later on AIX Unix. Client support will include Windows and OS/2. The messaging product had been scheduled for delivery this fall, but a source close to the company said it will not enter beta testing until early next year.

Once the messaging/groupware strategy is in place, IBM's product line will compete in many areas with Lotus Development Corp.'s CC:Mail and Notes, which IBM resells, acknowledged Richard Sullivan, director of workgroup solutions at IBM's Software Solutions division.

— Lynda Radosevich and Ed Scannell

UnixWare hits another pothole

By Jean S. Bozman

Novell, Inc.'s twice-delayed UnixWare 2.0 operating system, due to debut this week, is being put off yet again until early next year. Top Novell executives said last week they are trying to reposition the product as an industrial-strength application server.

"The upcoming rollout will have new capabilities that target the applications server market," Novell Chief Executive Officer Robert Frankenberg said last week. "The operating system is measured by the applications and the [independent software vendors] that support it."

UnixWare 2.0 is still a hot potato for Novell, which acquired AT&T Corp.'s Unix SVR4 server code from Unix System Laboratories, Inc. last year. But Novell failed to turn it into a high-end server product this year [CW, Jan. 10]. Even so, the leading LAN vendor should have had the inside track on converting the Unix code — which it sells to OEMs such as Unisys Corp. — into its own symmetrical multiprocessing server, analysts said last week.

Just ducky

"I think what [Novell wants] to show is they've got all their ducks in a row," said Michael Goulde, an analyst at Patricia Seybold Group in Boston. "That includes applications, [independent software vendors], catalogs, hardware and software support and T-shirts and logos."

It's official

This week, Frankenberg, Novell Unix Systems Group general manager Michael DeFazio and other executives will go public with their plans to fit UnixWare into Novell's revamped product strategy (see story at left).

But Novell's task in repositioning the UnixWare 2.0 product will be a tough one after fumbling the Unix football more than once, industry analysts said last week.

"Novell has one shot left in this market," said Scott Winkler, a senior Unix analyst at Gartner Group, Inc. "If UnixWare 2.0 does not immediately gain acceptability and begin to build momentum, [it] will never be able to crack the application and database server market beyond NetWare."

As Frankenberg molds the firm's diverse products into a more tightly integrated product line, Novell will try to show that UnixWare will be supported widely by value-added resellers and independent software vendors. "Frankenberg knows you don't play your strong card by playing it close," said Michael Goulde, a senior analyst at Patricia Seybold Group in Boston. "You go out and garner support. He understands how to leverage the marketplace."

Some analysts expect UnixWare to increasingly be sold through the extensive NetWare distribution channels.

Links to other Novell products will also be promoted as a special advantage to using Novell's Unix server. UnixWare 2.0 will be positioned as an application server linked with NetWare's network services. UnixWare 2.0 will also make use of Novell's Tuxedo on-line transaction processing monitor to drive client/server transactions networkwide, Frankenberg said last week.

Steve Silva, a network administrator at De Vry Institute in Phoenix, said he has not given up on UnixWare, even though the school's UnixWare server is now housed in a networking lab. Silva became frustrated by what he considered uneven support provided by phone and over CompuServe and decided to switch to The Santa Cruz Operation's SCO Unix 3.0 servers for the school's C language programming students.

"Frankenberg is changing the company's direction, and things are going to be delayed," Silva said, referring to UnixWare 2.0. "[But] I think it'll be better in the long run." He says he plans to evaluate UnixWare 2.0 when it ships.

Senior editor William Brandel contributed to this story.

Novell

CONTINUED FROM COVER 1

resource of business information around," he added.

The Corsair and NEST technologies are key aspects of Novell's much-touted "pervasive" computing strategy, Novell sources said.

Third-party vendors in WordPerfect's developer community are building NEST-enabled applications that will graphically depict, for example, a library. The application would show a hallway, then a room and then devices within the room. Using Corsair to navigate, the user would find these devices and retrieve multimedia data or documents.

Special delivery

Novell plans to deliver a full-function, three-dimensional version of Corsair for desktops, sources said. A Corsair "lite" version, without 3-D capabilities but including navigating functionality, will be available for portable computers, wireless devices and PDAs. Both will be backward-compatible with NetWare 3.x and NetWare 4.x clients. Pricing has not yet been determined.

Holiday gifts

Novell is expected to deliver NetWare 4.1 between Thanksgiving and Christmas.

Moreover, Novell has a number of initiatives under way with both private branch exchange (PBX) providers and cable television suppliers. These deals will result in users being able to access data from virtually any mobile location using an electronic device, Novell officials said. For example, two dozen PBX providers are now developing NEST-enabled services, which will be available in mid-1995, said Darl McBride, vice president and general manager of Novell's networks division.

NEST-enabled devices such as portable computers will be made available around the same time, he added.

Garnering support

Novell has also worked out deals with a number of cable TV hardware and software providers that will support its NEST technology, McBride said. Those cable providers will use NetWare servers and NEST to send and receive data from NEST-enabled devices in businesses and homes, McBride said.

At least two major cable companies will announce their plans before year's end, he added.

In another example, Kurzweil Applied Intelligence, Inc. in Waltham, Mass. — which announced a development, marketing and sales agreement with Novell last week — is providing technology that voice-enables WordPerfect applications.

Provided that Novell delivers on the special application programming interfaces now under development, Kurzweil "would be very interested in providing the technology that would enable a user to do that," said Mark Flanagan, a Kurzweil executive vice president.

Corsair and NEST will also enable consumers to use products such as Novell's recently acquired Microsoft Money software to do home banking via NetWare, McBride said.

The Corsair and NEST technologies are key aspects of Novell's much-touted "pervasive" computing strategy, sources said.

NetWare sites contacted said their Internet population is increasing rapidly. Some estimates chart the Internet traffic growth rate at 80% per year, and the Internet Registry Service says it now receives 2,000 Internet applications per month. Because of this trend, users say anything that makes access easier for mobile users is a benefit. Moreover, the lack of an intuitive interface for the Internet means that many users do not use it now for anything other than electronic mail.

Still, expanded Internet freedom might bring increased security risks.

"The feeling is that if you get on the Internet, you have to build a two-way node," said Raymond Pompon, a LAN administrator at KMPG Peat Marwick Co. in Honolulu. "I'd be reluctant to use this stuff until I knew what the security aspects would be."

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Multimedia authoring tool aimed at non-techies

By Ed Scannell

■ Still in the business of inventing the future, Dan Bricklin last week introduced a Windows-compatible multimedia authoring tool that promises to make application development significantly easier.

Bricklin, co-inventor of the electronic spreadsheet Visicalc and until recently an executive at the now-defunct Slate Corp., has created OverAll Viewer. Bricklin said he believes the tool will be used not so much by programmers as by those less technical types using multimedia authoring tools to do everyday tasks.

"I see this being used in applications for navigating through on-line services, people doing airline reservations and publishing newsletters," said Bricklin, president of Software Garden, Inc. in Newton, Mass. "I think it is a tool that won't penalize you for knowing what you are doing."

One of OverAll Viewer's more impressive capabilities is its ability to zoom in and display magnified details of a road map or an architectural drawing. Users can do this while maintaining the overall view of the entire map or drawing.

"The product's way of interacting with informational images could be called a multipanel zoom metaphor. [OverAll Viewer] lets you display two or three images simultaneously, with each image showing a further magnified view of that information," Bricklin explained.

Some early corporate beta testers said they are impressed with the product and believe it is useful for less technical employees, who may be asked to create small applications quickly and under budget.

"Frequently, people who are somewhere between being technically minded and expert in line-of-business subjects are asked to do some job that requires both skills. This product narrows the gap between the two," said Rob Koehler, a multimedia developer at a large Midwestern insurance company.

STELLA JOHNSON

Software Garden *President Dan Bricklin sees OverAll Viewer as a navigator*

Koehler said he sees strong possibilities for developing multimedia applications for training purposes, to monitor employee performance or to create an on-line internal magazine at his firm.

OverAll Viewer deals with information more spatially than textually, so people can be located both ways, either by name or title or by their location on a map.

Expected to be available this week, OverAll Viewer carries a suggested retail price of $395 and is bundled with a free runtime version. Users can purchase it by calling Software Garden at (800) 745-6101.

Microsoft unfolds SNA Server 2.1

By Stuart J. Johnston
REDMOND, WASH.

Microsoft Corp. announced last week it is shipping the latest update to its IBM mainframe connectivity product for Windows NT Server 3.5.

News of SNA Server 2.1 came at a conference held here, which also featured the first public demonstration of Windows NT for the IBM PowerPC.

However, shipment of NT for the PowerPC has been postponed because of hardware issues, said Jim Allchin, vice president of Microsoft's Business Systems Division.

SNA Server 2.1

- **Handles up to 2,000 clients simultaneously**
- **Handles up to 10,000 host sessions simultaneously**
- **Supports IPX/SPX, TCP/IP, Banyan Systems, Inc.'s Vines, AppleTalk and Remote Access Services (RAS)**
- **Supports Windows, Windows NT, OS/2, Unix and Macintosh clients**
- **Can combine up to 50 SNA Servers for load balancing**

"We felt it would be a disservice to ship it on only one" PowerPC chip, said Matt Ragen, product manager for Windows NT Workstation. Microsoft had beta-tested NT only on 601-based machines and decided to wait until it could complete testing on machines based on the 603 and 604 versions of the PowerPC chip.

Microsoft now plans to ship NT for the PowerPC "during the first quarter" of next year rather than during the fourth quarter of this year, as it announced in September, Ragen said.

A PowerPC version of SNA Server 2.1 will follow the release of NT for the PowerPC within two weeks, said Vesa Suomalainen, general manager of the SNA Server product unit.

The updated version of SNA Server released last week is available for Intel Corp., Mips Technologies, Inc. and Digital Equipment Corp. Alpha AXP chip architectures. It will cost $409 per server license plus about $65 for each client license.

"This is the product to create a breach to Novell's hold on the network, and then the next step is bye-bye, Novell," said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington. "It's feature-rich, much more than Novell's [connectivity server] is."

SNA Server 2.1 has improved performance over earlier versions and handles up to 2,000 clients running up to 10,000 host sessions, Suomalainen said. Administrators can combine up to 50 SNA Servers to support load balancing, add extra capacity or provide hot backup.

Microsoft pushes its TAPI interface. See page 59.

Goblins plague NASDAQ

CONTINUED FROM COVER 1

lems. The GAO is expected to complete its report by year's end.

Further complicating matters, the U.S. Department of Justice earlier this month launched an antitrust investigation to examine allegations of anticompetitive practices by the over-the-counter stock market and whether brokerage houses that trade on the exchange have colluded on stock pricing.

As disturbing as this sequence of events may seem, some Wall Street information systems executives are rankled about a different set of issues with the exchange, which bills itself as "the stock market for the next 100 years."

To interface with the NASDAQ quotation system, brokerages currently use a PC-based interface that does not include an application programming interface to Sun Microsystems, Inc. and other Unix platforms prevalent in trading floor environments. While Merrill Lynch & Co. managed to program its traders' presentation screens to interface with NASDAQ, other brokerages have been forced to spend thousands of dollars to install IBM PCs next to their traders' Unix workstations to communicate with NASDAQ.

For example, Prudential Securities, Inc. has installed an additional 250 IBM PCs at a cost of $900,000 to enable traders to utilize NASDAQ.

Richard Justice, NASDAQ's executive vice president and chief technology officer in Washington, downplayed the recent series of events that have scarred the exchange. "The most significant thing was the [2½-hour] delayed opening [on July 16], and that was a problem that was fixed and won't occur again," he said of the faulty disk drive that was replaced.

Haunted house

NASDAQ's computer-related problems during the past four months include:

JULY 14: A 12-minute network disruption after an unsuccessful upgrade of mainframe communications software.

JULY 15: A 2½-hour delay after failure of a solid-state disk drive.

AUG. 1: A 34-minute interruption after a squirrel chewed through a power line feeding NASDAQ's Trumbull, Conn., data center.

OCT. 3: A 15-minute suspension of stock price quotes due to a Unisys mainframe problem with the exchange's Small Order Execution System.

OCT. 25: Another 15-minute disruption in trading due to a communications software glitch.

Out of its misery

For its part, NASDAQ is hoping that a $175 million upgrade of its computer network will put an end to its systems woes. Earlier this month, the exchange began piloting Workstation II, a set of communications software packages based on The Santa Cruz Operation's SCO Unix and designed to enable brokerages to interface with a variety of workstation platforms, such as those running Sun's Solaris, OS/2 and Windows. NASDAQ is also replacing its 9.6K bit/sec. leased-line communications network with an MCI Communications Corp. 56K bit/sec. network that will eliminate the need for concentrators in major metropolitan regions with automated redundancy features.

Furthermore, at the heart of its Trumbull, Conn., data center, which has been the most frequent site for systems disturbances, NASDAQ is replacing its aging Unisys Corp. 1100 mainframe systems with newer Unisys 2200/900 hubs. The new mainframes were supposed to go live in mid-September. However, NASDAQ has had to rewrite mainframe communications software to enable a piece of Unisys hardware called GCS to adapt to the new network, Justice said. This will delay the mainframe rollouts till year's end.

Despite the overhaul of NASDAQ's computer networks, which will be designed to accommodate 800 million shares per day — three times its current daily trading volume — industry observers continue to question the vision of NASDAQ management. "There should be some change management procedures in place to avoid some of these problems. You would think that they would be more forward-thinking like the brokerages they serve," said Deborah Williams, an analyst at The Tower Group, a Wellesley, Mass., financial services/technology consultancy.

Justice stood behind his organization's 99.98% systems uptime record, although he acknowledged that those numbers will be offset by the July outages. "When you're going to an open architecture, when you're interfacing on an interactive basis, there's always a potential for problems to occur."

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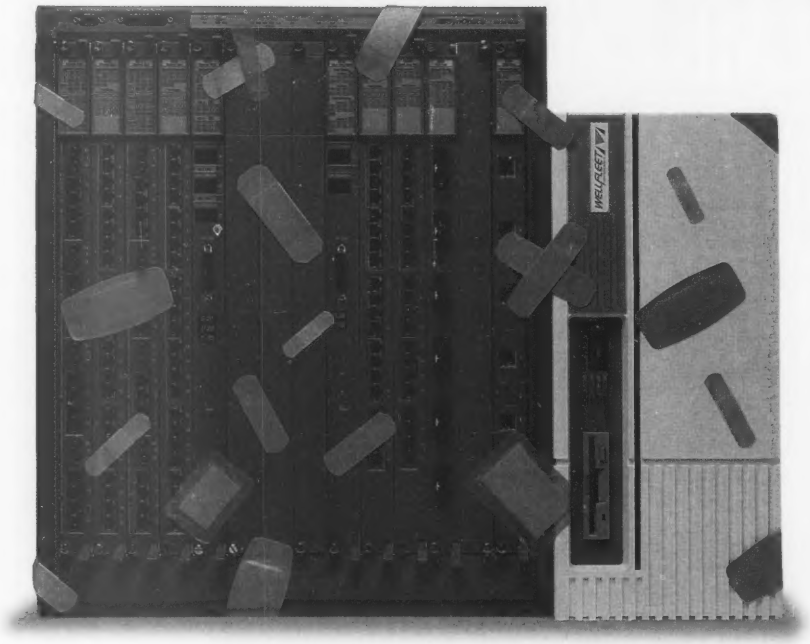

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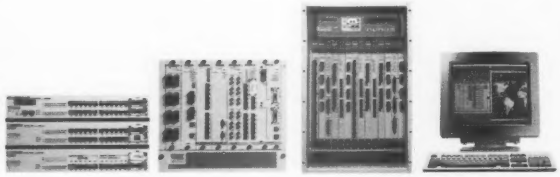

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BANDWIDTH SOLUTION

Intel, CNN put cable news on desktops

By Jaikumar Vijayan

Now you don't have to run home to watch the latest on O. J. Simpson.

Coming live to the corporate desktop is the latest twist in the O. J. saga — and other news, too — from CNN and Intel Corp.

The companies last week announced a subscription service that offers business users their choice of either *Headline News* or another CNN broadcast via their corporate LAN. Called CNN at Work, the service allows subscribers to receive, store, view, index and retrieve live news feeds with accompanying headlines pumped by CNN into the corporate LAN.

However, few expect there will much O. J.-watching.

A service such as this is a natural for financial services organizations, Wall Street analysts, stock brokers and traders, said Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz. "It's going to be most important for people working in an information- and time-intensive environment," where knowledge of current, up-to-the-minute news developments is crucial, he added.

CNN at Work *can deliver 'round-the-clock news on the desktop*

A subscription costs $12.50 per month, billed annually for orders of up to 50 subscribers. Users can filter and retrieve stored news feeds by simply clicking on the accompanying headline, much like opening a standard file on the desktop.

A certain amount of customization is also possible. Stockbrokers, for instance, can customize the ticker tape running across the bottom of their screens to display the stocks they wish to monitor. Current information on them is automatically displayed and dynamically updated in the CNN stock table.

"This definitely is another way to add value to the PC, especially for general business users," said David Wu, an analyst at Wall Street broker S. G. Warburg & Co.

The new Intel technology will also allow corporations to broadcast company videos and other information to users over their LANs. For example, companies can link a standard VCR or external video camera into the system and broadcast corporate videos, training films and meetings.

Hard news

Hardware requirements for CNN at Work include a minimum of one 33-MHz Intel I486-based system, a 256-color VGA monitor, 8M to 12M bytes of RAM and 3M bytes of available hard disk space.

According to Intel, CNN at Work will run on an ordinary 10M bit/sec. Ethernet LAN. To access the service, corporations will have to purchase an Intel 66-MHz I486DX2-based system with hardware and software to capture and compress the news and information, which is then sent over the LAN as packets of data.

The system digitizes and compresses video in real time and multicasts it to all PCs loaded with Intel's Viewer software. Yet the feeds will not hog network bandwidth, the vendor claimed, because Intel's multicast LAN technology allows a single stream of video packets to be received by multiple users on the LAN without affecting nonsubscribers.

"We definitely are interested in something like this," said Jeanine Shumaker, coordinator of corporate communications at Rosenbluth International in Philadelphia. CNN at Work could be vital for Rosenbluth, a major travel agency that constantly monitors CNN broadcasts to issue travel advisories and flash faxes to corporate clients, she said.

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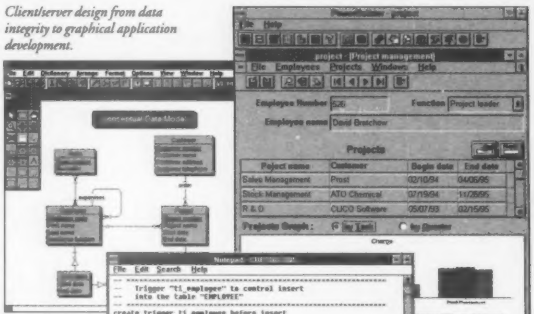

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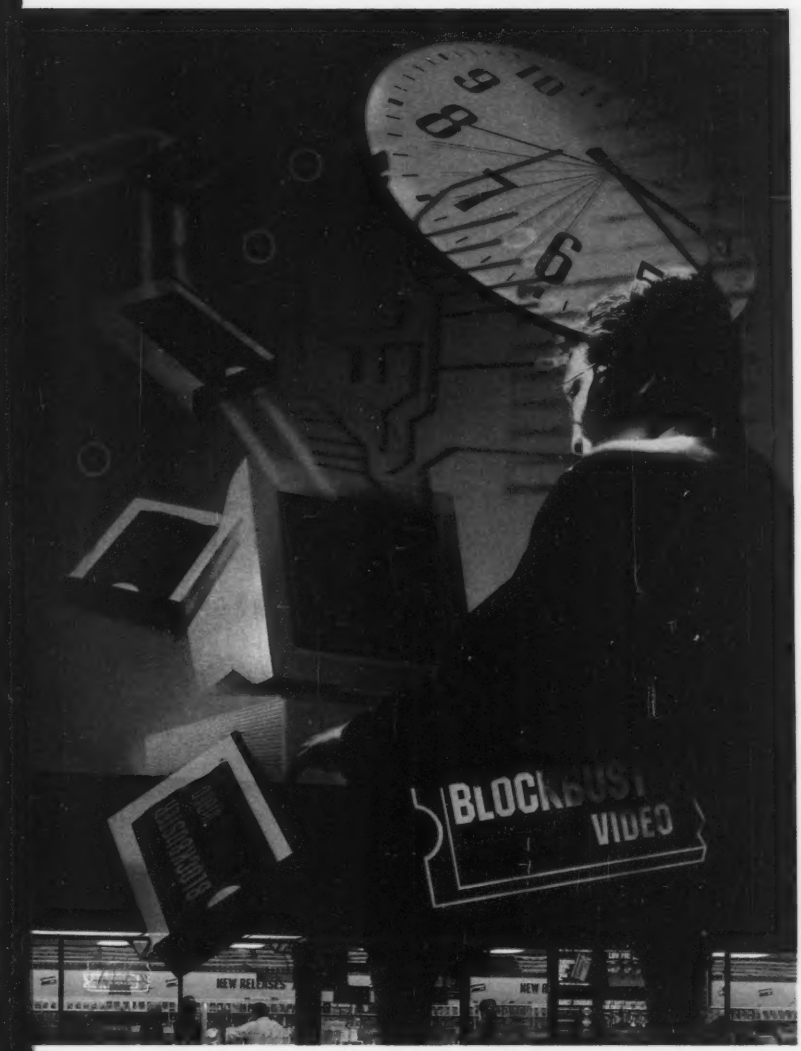

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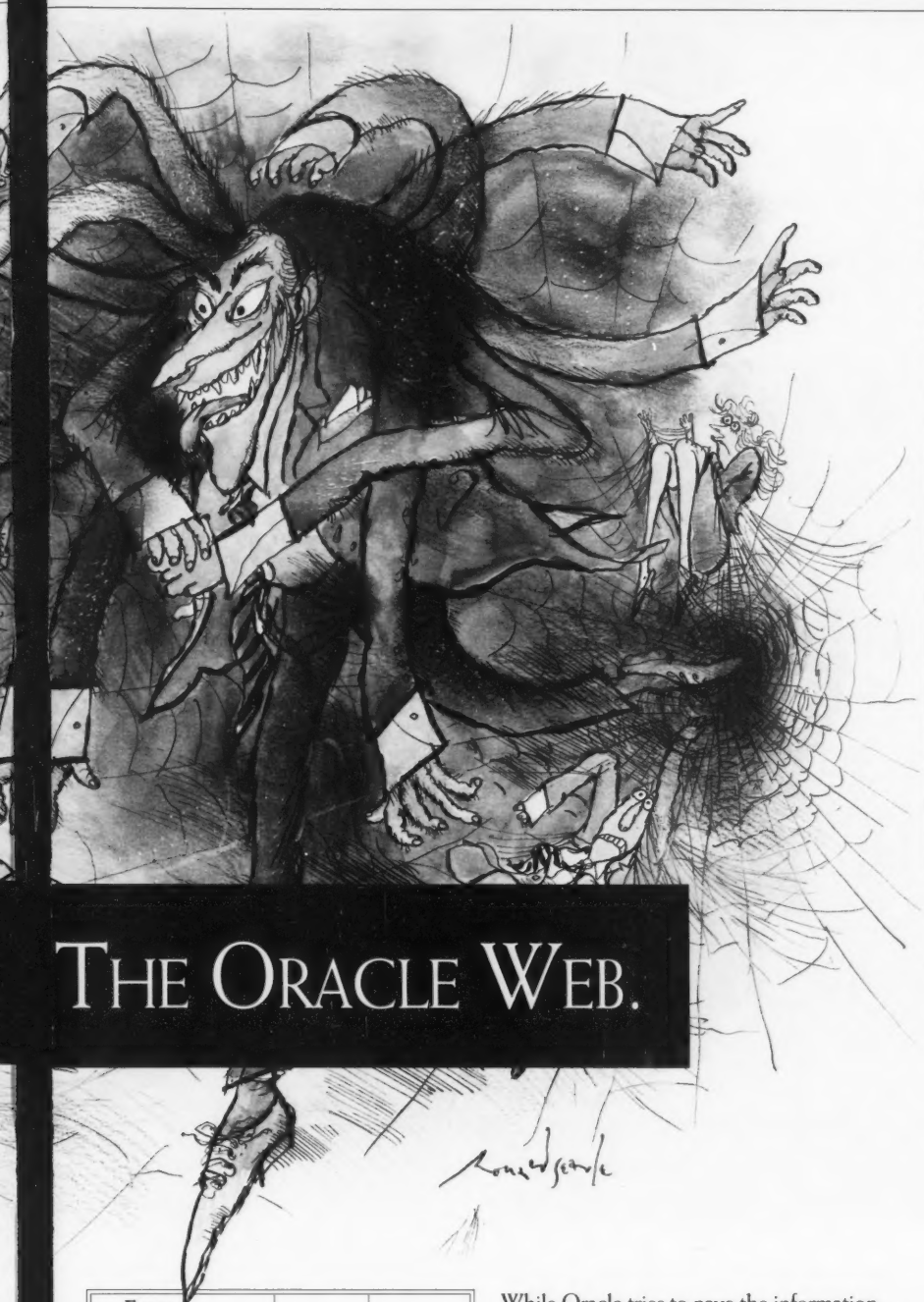

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Software firms turning to global markets, CD-ROM for sales

By William Brandel

Software will be translated into many languages, distributed via CD-ROM and sold through new licensing structures, according to a recent survey conducted by a bellwether regional software group.

The Massachusetts Software Council last week released its annual report on a broad range of practices that software publishers said they will employ next year. Conducted by Price Waterhouse LLP in Boston, the survey canvassed more than 1,000 software companies doing business in Massachusetts.

As the largest regional software study in the U.S., the survey is nationally viewed as a prime indicator of software practices, said Andrew Seybold, editor of the "Outlook on Professional Computing" newsletter in Boulder Creek, Calif.

One key finding was that the globalization of U.S. corporations is driving software firms to increasingly turn to foreign markets for new software sales. To that end, companies are translating software into other languages more often.

Underscoring this theme of software internationalization was Bruce Lehman, the U.S. assistant commerce secretary. Lehman said federal initiatives such as the North American Free Trade Agreement and pending legislation in Congress on the General Agreement on Tariffs and Trade (GATT) will further bolster U.S. software sales overseas.

If ratified, GATT would essentially provide an international copyright law for the first time in all countries signing it. Lehman said developing companies often lack intellectual copyright protection, which essentially makes illegal pirating of software legal in those nations.

STELLA JOHNSON

Bruce Lehman: *GATT will close the copyright loop*

When GATT is approved, it "will close the international copyright loop," Lehman said. He said government statistics indicate that software companies with annual revenue of more than $10 million derive 20% of that revenue from overseas sales.

Think globally

The Massachusetts Software Council study backs up this assertion. Software companies expect to pull in 87% of their revenue from domestic sales by the end of the year, down from 89% last year, according to the study.

"The vendors are now beginning to respond to their global customers with worldwide pricing and support arrangements," said Joe Tibbetts, national director of the software services group at Price Waterhouse. "This is not unique to any segment in the software industry."

The study also found that users are gaining increasing leverage on how software publishers plan to sell and support their software in the coming year. The study noted that just as users put pricing pressures on desktop hardware, they are now demanding to pay less for software — and only for software they use.

As a result, more software companies are moving away from device-based pricing, such as per-PC or per-operating system charges. Rather, software companies are embracing site-license and concurrent-user pricing schemes.

While pricing flexibility is in, free support bundled into those prices is out. Overall, only 28% of the software vendors surveyed will include free support — down from 37% in 1993 and 45% in 1992. Among these companies, only 13% of them are larger firms.

The study also found that software makers will increasingly provide electronic means for software distribution. While only 8% of the software makers were distributing software on CD-ROM by the end of last year, 33% are expected to use that means by the end of this year.

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Of course, your current vendor may well *promise* you all this and more. But do you really want to bet the future of your company — *and your career* — on promises? Instead, call 1-800-HP-KNOWS and talk to the company that has a clear vision of the future.

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Smart models revolutionize design

CONTINUED FROM COVER 1

While the U.S. Department of Defense is initially focusing the ARPA program on Navy ships and submarines, the technology has broad commercial application in manufacturing, corporate officials said. Companies as diverse as Lockheed Missiles and Space Co. and Caterpillar, Inc. are following the technology and exploring some of the same techniques.

For shipbuilders, the days of spending many months and tens of millions of dollars to build full-scale wooden models are nearly over, said Gary W. Jones, program manager at ARPA's Maritime Systems Technology Office. Instead, they will build "virtual prototypes in synthetic environments" using technology developed in ARPA's Simulation-Based Design (SBD) program, he explained.

Caterpillar *uses Simulation-Based Design to help put the designer in the driver's seat*

Just like being there

The prototypes are "smart models" — not just visual renderings of objects, as seen in most CAD systems. These smart models consist of linked databases and modeling software that completely describe an object's geometry, weight, cost, materials, performance characteristics, reliability, vendor and more.

Moreover, the models obey the laws of physics, which are reflected in the synthetic environments. For example, a ship design can be tested by floating it on a virtual sea and subjecting it to waves, wind and other virtual perils.

Armed with these advanced tools and the principles of concurrent engineering, thousands of military and corporate design and manufacturing people will collaborate in remotely distributed teams. Immersed in a virtual environment, designers in Newport News, Va., vendors in places as far-flung as Detroit and Germany and military officers at the Pentagon will all collaborate as if they were under one roof.

In the previous example, for instance, the ship designer moves the column out of harm's way, and that move is propagated automatically to a number of subsystems, which compute the impact of the change on ship design, cost, materials, manufacturing specifications and logistics. Members of the geographically dispersed design team can also be automatically notified of the change via electronic mail.

"Much of the software and hardware used by the Defense Department for [Simulation-Based Design] has commercial applications. Research funded by DOD seeded the field, and now there is a large commercial market."
— U.S. Congress, Office of Technology Assessment, October 1994.

In a recent effort to find a way to get Navy ships to the Middle East faster, designers tried several new engines in a virtual ship. By clicking on engine icons in vendors' electronic catalogs, designers imported engines into the ship model to show in minutes whether the engine fit the compartment, and so forth. Jones said the model shrank what normally would have been a three-month process to about four hours.

SBD concepts are also likely to be applied in a broad range of manufacturing environments, Jones said.

Lockheed, which is leading one of two industry teams in the ARPA program, will apply the technology in its own lines of business within six months, according to Ron Clark, director of technology applications at the company's research and development division in Palo Alto, Calif.

For example, Lockheed will build virtual prototypes of satellites to be launched and evaluated in software. The objective is to not only build satellites faster and cheaper but also make the end product fundamentally better, Clark said. "Building the right product means trying a lot of options up front," he said. "Don't just look at one or two options because that's all the money or time you have.

"The core innovation here is the smart product model," he continued. "If you look at a [satellite] attitude sensor, for example, the model not only knows what it is and what it does, it knows how it interacts with other pieces of the product. The typical product model doesn't contain these interaction attributes."

But while this interaction among different models gives SBD its power, it is demanding on software and hardware alike.

For instance, Lloyd's Register of Shipping in London uses some of the ARPA virtual reality concepts to simulate the behavior of ferry passengers and crew members in evacuation scenarios. "So far, the work looks promising," a Lloyd's spokeswoman said. "But the human behavior algorithms require considerable computing power to simulate realistically large numbers of people found in confined spaces onboard."

Caterpillar is also keeping an eye on ARPA's work and is exploring some of the same techniques at a laboratory of the National Center for Supercomputer Applications at the University of Illinois. "The big payoff is being able to do more visualization and checkout without doing so many mock-ups," said Charles Crowell, a senior design engineer. He said Caterpillar has used SBD to model a backhoe loader and other items he declined to discuss.

Although no SBD production systems have been fielded yet, the feasibility of the technology is no longer in doubt, Jones said. He recalled how many observers warned it could not be done when ARPA began its work 18 months ago.

STANDARD DISORDER

When it comes to simulating complex objects and processes, lack of standards for interoperability among models is one of the biggest challenges facing pioneer users.

"I have all these basic models, but how do I get to them?" asked Samuel Nicholson, an engineering supervisor at PRC, Inc., an ARPA contractor. "And what are the various protocols for calling in the models at the right time to make them interplay?"

Lloyd's Register of Shipping, for example, faces similar problems in its use of virtual reality to classify and certify ships. "Initial trials at importing models from proprietary CAD/CAM systems is promising, but lack of an internationally recognized standard data model requires special data translators to be built," a spokeswoman said.

But help may be on the way. Recently, the Defense Department awarded a contract to a team of companies and universities led by IBM to develop open software protocols to integrate manufacturing environments. The protocols will allow disparate systems of different manufacturers to exchange information in real time so companies can work as a single, integrated "virtual enterprise," an IBM spokesman said.

But sometimes the standards problem is very local. "Right now, I have four Macintosh disks on my desk. And I have this big 486 machine in front of me, but the machine is useless because it won't read the disks," Nicholson said. — *Gary H. Anthes*

BULK UP THAT DISK

As one might expect, modeling complex objects as virtual prototypes in synthetic environments eats up a lot of computer cycles and disk space.

An aircraft carrier, the most complex physical system ever built, contains 30 million components — not just nuts and bolts, but pumps, fans and other major items. Modeling the ship in real time with high-resolution displays will require 200G bytes of on-line disk storage, more than 1G bit/sec. of network bandwidth and 10 billion floating-point operations per second of computer power, estimated Gary W. Jones, program manager at ARPA's Maritime Systems Technology Office.

So far, ARPA's work in SBD has consisted of feasibility demonstrations, using supercomputers from Cray Research, Inc. and high-end workstations from Silicon Graphics, Inc.

For software, ARPA is using several commercially available CAD packages, surrounded by C++ software "wrappers" written by ARPA contractors. The resulting "megaprograms" treat individual programs as linked objects. — *Gary H. Anthes*

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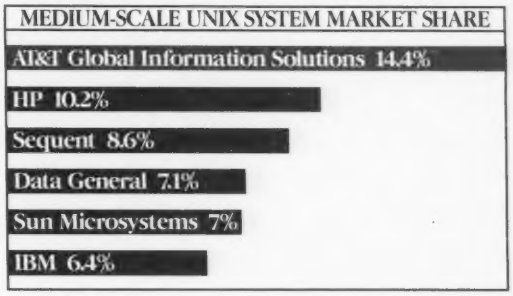

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Briefs

Banyan profits up

Banyan Systems, Inc. posted a $4 million profit on revenue of $38.9 million for its third quarter. This compares with a $3.5 million profit on $32.4 million in sales for the same quarter last year.

Cray results rosy

Cray Research, Inc. reported a $16 million profit with revenue of $220 million for the third quarter ended Sept. 30. For the same period last year, Cray posted a $15.2 million profit on $201.9 million in revenue.

PeopleSoft beams

PeopleSoft, Inc. saw profit for the third quarter ended Sept. 30 increase from $2.2 million last year to $3.7 million. Revenue nearly doubled, reaching $29.6 million, compared with $14.9 million for the same period last year.

Intel buys net assets

Intel Corp. last week said it acquired certain assets of Netanya, Israel-based **Shany Computers Ltd.**, a company specializing in the development of network application management products. Intel will add Shany's AlertView management software to its LANDesk LAN management family.

DG losses shrinking

Data General Corp.'s year-end 1994 revenue rose 4% to $1.12 billion, compared with $1.08 billion last year. However, it lost $87.7 million, due in part to a restructuring charge of $35 million, compared with a $60.5 million loss and a $25 million restructuring charge last year.

SHORT TAKES **Kopin Corp.**, a Taunton, Mass., developer of flat-panel displays, has made an equity investment in **Forte Technologies, Inc.** It will support the Rochester, N.Y., firm's development of virtual reality head-mounted systems and peripherals.

Surprise! Cisco buys Kalpana

By Stephen P. Klett Jr.

■ In an unexpected move last week, Cisco Systems, Inc. announced it will acquire Kalpana, Inc. in a stock deal worth roughly $204 million. Several reports had portrayed IBM as the front-runner to acquire the private Ethernet switching vendor for $150 million.

Kalpana will become a wholly owned subsidiary of Cisco and will retain its current management team. President and Chief Executive Officer James Jordan will become general manager of the Kalpana business unit, whose headquarters will remain in Sunnyvale, Calif. The deal is expected to be completed by year's end.

Some observers expressed shock that Kalpana, which generated roughly $40 million in business last year, could command such a high price.

With close to a 35% share, Kalpana is the leader in the $265 million worldwide Ethernet switching market, according to Dataquest, Inc. in San Jose, Calif. However, the research firm said it expects the market to be worth more than $2 billion in five years.

"Cisco has targeted the Ethernet switching market as one it wants to dominate, and this is a big step in that direction," said Marty Palka, a principal analyst at Dataquest. He said Cisco holds 8% of the worldwide market.

Cisco plans to position Kalpana's EtherSwitch line as an entry-level workgroup product, according to Barry Eggers, director of business development. Its high-end offerings include the Hyperswitch enterprise Asynchronous Transfer Mode switch and the Catalyst Fiber Distributed Data Interface switch. Catalyst is the product of Cisco's roughly $90 million acquisition of Crescendo Communications, Inc. in September. Cisco also owns a portion of Cascade Communications Corp., a wide-area switch vendor in Westford, Mass.

Plenty o' ports

Kalpana has shipped 20,000 Ethernet switches to date, totaling 150,000 ports. Each port supports roughly 20 users.

Palka said the acquisition should benefit users. "Some people may have been hesitant to go with Kalpana because you never know if a small, private company will be around long term," he said. "Now Kalpana is one of the big guys, which extends its product life cycle and should give users some level of comfort."

Too steep for IBM

While an IBM spokesman acknowledged that the company was talking with Kalpana about a possible acquisition to help boost its switching line, he said $200 million-plus was simply too steep a price. "With any acquisition, you have to weigh what you're getting against what you're giving, and in this case we felt the price was too high," he said.

According to both Cisco and IBM officials, the acquisition is expected to have no effect on IBM's current OEM and development agreements with Kalpana. Kalpana and IBM are working together on Token Ring switching technology. Eggers said Cisco plans to preserve the Kalpana product name as well.

U.S. Robotics, Megahertz join modem forces

By Michael Fitzgerald

The recent merger between U.S. Robotics, Inc. and Megahertz Holding Corp. looks to create a formidable broad-based competitor in the modem market that is likely to prove a boon to users.

U.S. Robotics has one of the broadest product lines in the market, and Megahertz dominates the mobile segment where U.S. Robotics is a bit player. The merger is worth approximately $215 million, subject to the approval of both companies' stockholders.

"We think it will be very beneficial to our customers," said Ross Manire, U.S. Robotics' chief financial officer. By combining its desktop, LAN/remote access and WAN/enterprise modems with Megahertz's mobile communications, U.S. Robotics will strengthen its overall offerings, Manire said.

ANDREA MANDEL

U. S. Robotics CFO Ross Manire *and* **Megahertz CEO Spencer Kirk** *envision a stronger combined company*

A good deal

At least one joint customer agreed.

"They're our preferred vendors for different products, and I think it gives them better production facilities and less of a reason to go head-to-head," said John Woods, a PC systems specialist at Chevron Information Technology Co. in San Ramon, Calif. Chevron has standardized on U.S. Robotics' rack-mount and external modems and uses Megahertz PC card modems.

"This is a good deal," agreed John D. Grangaard, an analyst at GS2 Securities, Inc. in Milwaukee. "It fills the product gaps that U.S. Robotics had on the wireless fax/modem area and strengthens them against Motorola."

Grangaard said Motorola, Inc.'s transmission line of business is U.S. Robotics' most broad-based competition.

The pair seem to fit together well. U.S. Robotics' strength lies in its retail distribution channel and products and its high-end, data center-class modem offerings.

Geographically, the two companies are also well suited. U.S. Robotics has done well in Europe but has only fledgling operations in the Far East. Megahertz stumbled so badly in Europe that it folded its operation there but has established itself successfully in Japan. They also have a great deal of overlap in U.S. accounts.

Officials from the two companies said there will be some head count reduction. The combined companies will not need two investor relations staffs, for instance.

Working it out

Megahertz will become a division of U.S. Robotics and remain in Salt Lake City, with its current management team expected to continue running the division. The two companies do not expect to complete the merger until January of next year. They have not yet decided whether to keep the Megahertz brand name or what to do with the three brands of PCMCIA modem cards that U.S. Robotics currently sells.

"We actually envision a much larger division in Salt Lake City 12 months from now," said Spencer Kirk, Megahertz chairman, chief executive officer and president. Kirk said the merger will free Megahertz engineers to focus more on developing wireless PCMCIA modems.

The merger may also prompt other consolidations in the modem market.

"It's made [U.S. Robotics] more powerful, and it wouldn't surprise me at all if others may have to combine to compete against them," said Janet Fugazzotto, an analyst at BIS Strategic Decisions in Norwell, Mass.

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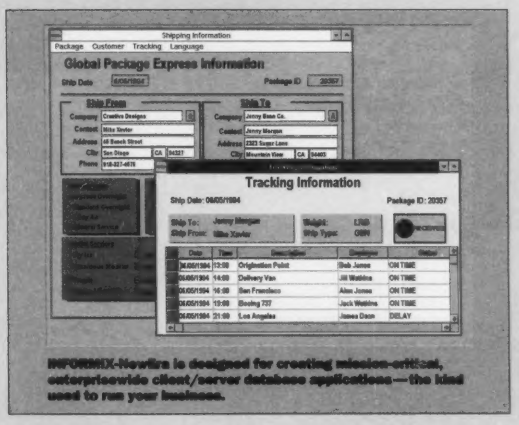

Application developers who have moved to graphical development tools are learning a painful lesson: while prototyping is fast and easy, it's another thing to try to deploy enterprise applications.

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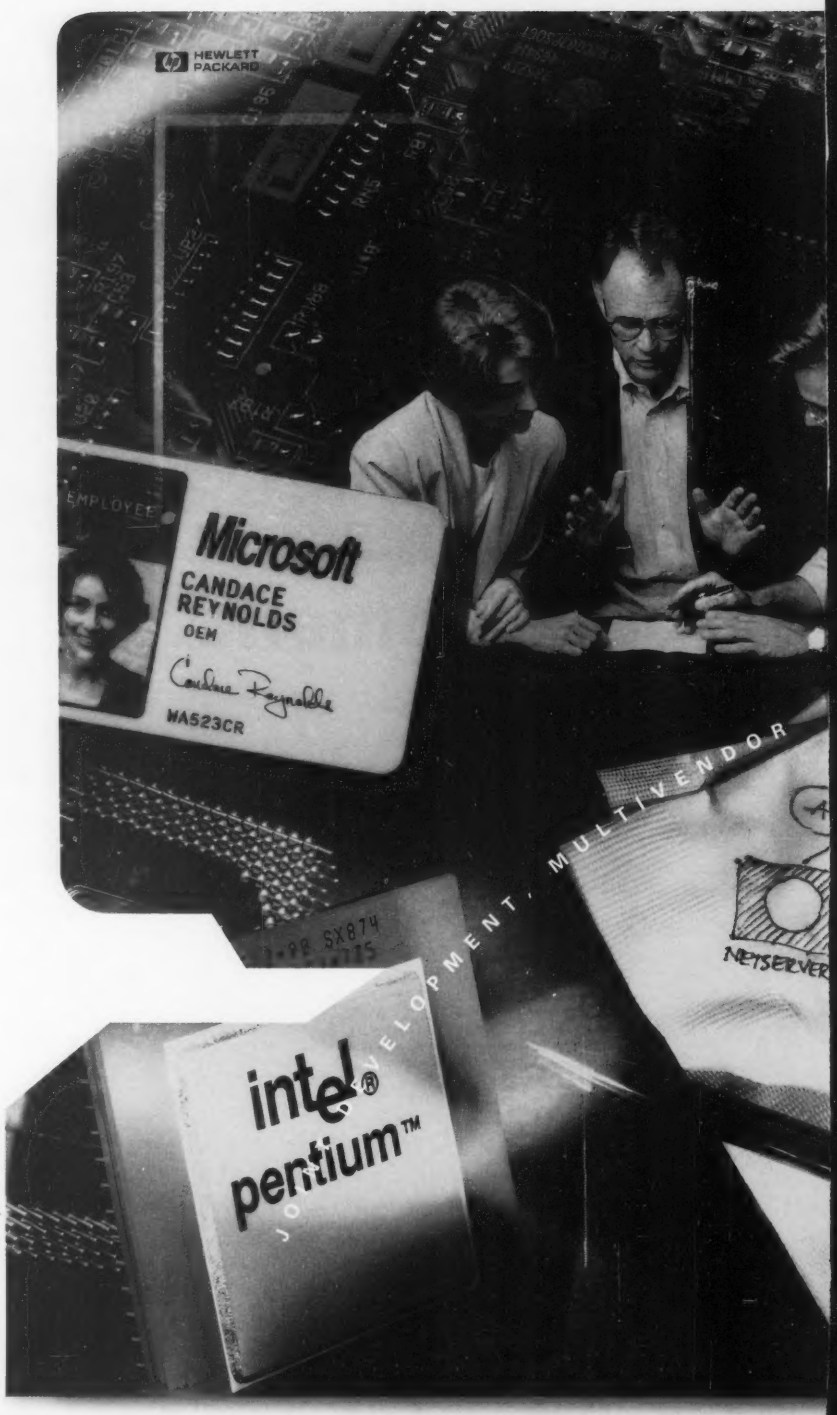

intel inside

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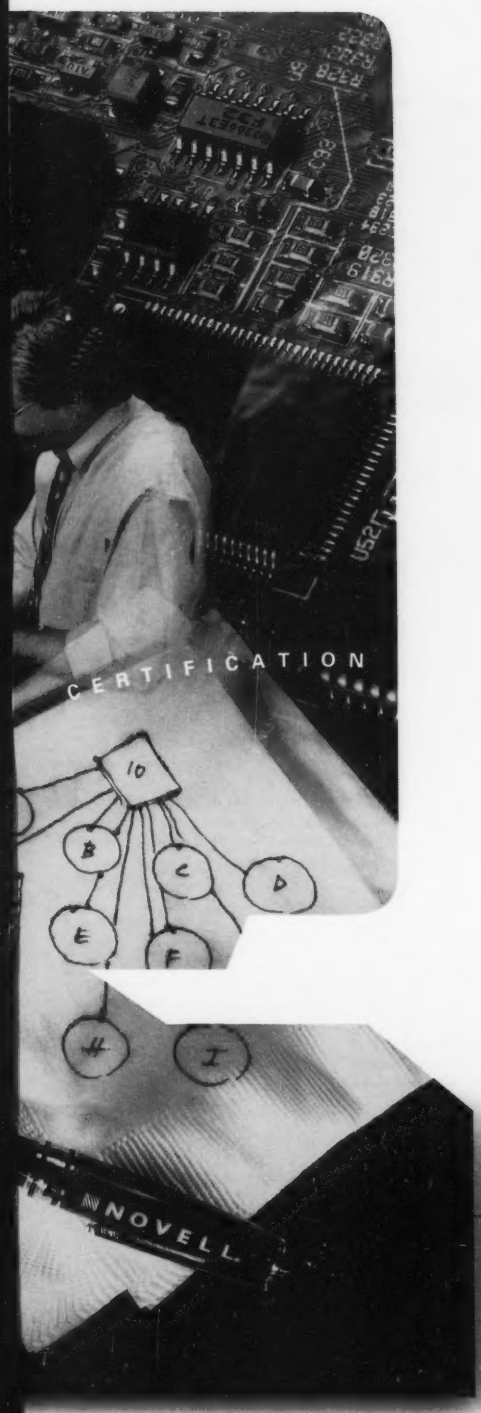

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A long drive

For years the Big Three automakers in the U.S. acted more like the Three Stooges or, even more accurately, three blind mice.

The buying public clamored for one and only one thing — quality at a fair price. Instead, buyers got Pintos, Imperials and exploding pickup trucks. Meanwhile, Japanese carmakers got deservedly rich.

A mere 15 years or so of manufacturing and marketing mediocrity passed before our carmakers got religion. Then they began producing quality vehicles, their customers responded, and market share is returning in prodigious chunks. I love my Ford Explorer.

For years I've attended one high-level information systems management conference after another. The faces change. The food doesn't.

And neither does one recurring theme: IS must build bridges to effectively link the corporation with its customers, making the corporation most responsive to shifting customer demands and requirements. Then maybe it won't take a decade and a half to, say, build a car the public wants.

So why is it this theme lives on year after year after year? Ostensibly, little progress is being made toward a solution. A recent report from Forrester Research said building customer connections will be the most critical IS task over the next five years. Add that to the previous five years and this has a look and feel reminiscent of our carmakers.

One explanation is connected to the realities of a post-recession economy. The recession stripped away thousands of IS jobs. Post-recessionist thinking dictates that it's a good idea to keep employment rolls down. Meanwhile, post-recessionist prosperity (relatively speaking), coupled with a dizzying array of new-age information technologies, is flooding IS sites with every manner of "productivity tool."

With fewer people to implement and manage these technologies and with the technologies themselves proving to be anything but simple, many if not most IS sites are bailing water. Managers are busy solving technology problems, not business problems. The customer connection isn't being made.

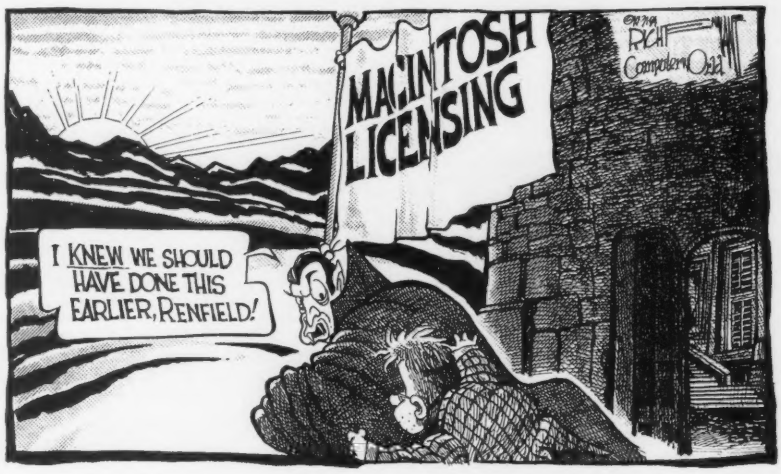
It would be nice here to say that progress is being made in using information technology to better connect corporations with customers, or that progress is on the horizon. But that is not the case.

The problem is that even more seductive technologies are looming, and they may prove as difficult to integrate as the first generation of open systems gear. For example, IS will have to face multimedia integration in the next few years as bandwidth drops in price. I guarantee this will be a nightmare, as the integration takes place over networks that are themselves anything but integrated or seamless.

Perhaps the skill IS management must hone the sharpest in the years just ahead is neither technologically nor strategically oriented — the skill of expectations management.

Bill Laberis

Bill Laberis, *Editor in Chief*
Internet: *blaberis@cw.com*



Wrong direction on info highway

Your dismissal of universal service on the infobahn ["Stay out of the way," CW, Sept. 26] smacks of digital elitism.

Those of us who have spent significant time in cyberspace understand the fundamental changes these technologies will bring to our society. Those left without access will be effectively disenfranchised.

In the past, our leaders had the foresight to require near-universal access to both telephones and electricity. Let us hope they have the wisdom to continue this tradition as they work to help introduce a technology that will have equal or greater societal impact.

Robert Stevahn
Boise, Idaho

You say that government should provide us with capital for the infobahn and then get out of the way.

Why should the government provide *anything* for private business? Let business go to private markets for capital. And why should the government provide guarantees of fair competition? What are these half measures but a request for freebies to play with?

This is reminiscent of James J. Hill's telling the government, "Give me a few million square miles of free right-of-way and don't bother me when I use it." That may have made sense in the age of robber barons, but some of us learned from that history.

James Mork
Minneapolis

Cheers for 'Gays at home in high tech'

I congratulate you on "Gays at home in high tech" [CW, Sept. 26]. You cover many issues relating to work in a high-tech environment; stories like these clearly also belong in your publication.

There are those who might question the need for gay computer groups. Having just left a very homophobic IS group, I can appreciate the support and networking such groups offer.

Gordon Schneemann
San Diego

I commend you on your article on Digital Queers and lesbians/gays in the computer industry. Only, what took you so long?

Lesbians and gays in the computer industry are notable not only for their visibility but for their actual numbers, as shown in one area you didn't touch on, the information highway.

Digital Queers has brought actual machines and hookups to every large gay and/or lesbian conference and is busily enabling activists all over the country to exchange information and ideas at an unprecedented speed and convenience.

Marianne G. C. Seggerman
Westport, Conn.

I was pleasantly surprised to see "Gays at home in high tech." I discovered the High Tech Gays section on a Fidonet bulletin board service a few years ago and have been amazed at the number of computer industry gays I have met on the Internet. It is refreshing to see *Computerworld* giving it a front page story.

Let me add that High Tech Gays on Fidonet serves several functions beyond those you mentioned. I have seen job postings about how to handle hassles by co-workers and the like.

Also, you might explore how company policies regarding gays and lesbians are carried out. I personally was denied a transfer for which I was qualified in a company with a nondiscrimination policy because the manager thought I might be gay. Computer Associates International, Inc. has a nondiscrimination policy in place and yet had an issue with employees of The ASK Group, Inc. over health benefits for same-sex partners. A written policy is not always honored.

Steve Heyl
Denver

I'm glad you saw fit to run this article. I'm sure you'll catch some flak for it. I hope you persevere.

David Shayer
San Carlos, Calif.

More letters, *page 38*

BEST COMPUTER NEWSPAPER 1992, 1993
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Time to give Blue its due

Frank Monteleone

My friendly IBM rep came to see me the other day with another IBMer to discuss its open blueprint for client/server computing. Now, you should know that I am pretty cynical when it comes to such things. I'm quick to throw its Systems Application Architecture in their faces. And when I'm in a real foul mood, I'll bring up the IBM 8100 or PC jr., but I was polite and listened.

They explained how IBM was committed to open systems and interoperability. This time is different, they said. This time Lou is calling the shots, and he means business. This time IBM is listening to its customers. They explained the new blueprint and how it fits into its customers' need to deal with the complexity of distributed computing. They gave me some documents about this blueprint and asked that I read them and provide them with some feedback. Then they left, all in less than the 60 minutes' time they had requested.

As I started reading these documents late that afternoon, I must admit I was not unbiased on the subject of IBM and client/server. Last year I was quoted in a *Computerworld* article as saying that "IBM isn't even on my radar scope when it comes to client/server." This quote appeared in big red letters in the article. It was greatly appreciated in Armonk. Representatives from its department of denial sent me literature about IBM's interoperability strategy to show me how wrong I was. It was stuff like how it was porting DB2 to the AS/400. That was IBM's view of it. It still thought the world should be all blue.

When I finished reading the materials they left behind this time, however, I felt more optimistic about IBM than I have in many years. If this is a true reflection of its strategy, it is admitting that the marketplace will dictate winners and losers in the distributed computing environment. IBM's strategy indicates it is going to take a leadership position in standards by clearly defining which ones it is committed to now, and that this will evolve as the industry and/or its customers change. Its direction for products and services in this area is openly revealing to its customers, business partners and competitors.

IBM has so much they can offer their customers. It's good to have them back on the scope.

This blueprint is much more than a marketing document or another how-to-build-it-all-blue book. It's really a useful planning tool that shows where and how to connect distributed systems through industry standards, right down to the International Standards Organization model.

It spells out direction for IBM products and services in this market in that there is clear responsibility for IBM executives to make it happen. In this document, it actually names which executive is responsible for which area. That is really a breath of fresh air.

It seems that IBM is incorporating in this strategy a recognition of the need for customer organizations to protect their current investments while they are moving to take advantage of best-of-breed components.

I can't recall the last time I saw a truly customer-focused document from IBM, but this really is customer focused.

This document can be very useful for people trying to plan the path to an effective distributed systems environment. It is well thought out and about as nonparochial as I have ever seen from IBM. As a player in this game, IBM has so much it can offer its customers. It's good to have it back on the scope.

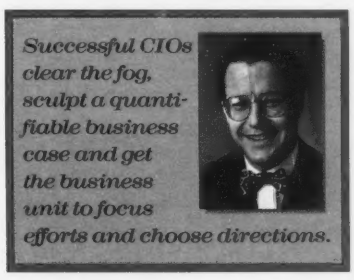
Monteleone is an information technology director in the Midwest and can be reached at fmmont@aol.com.

The CIO: Value detective

Thornton A. May

You may not think of the CIO as a Miss Marple or Sherlock Holmes, but there are remarkable similarities between the executives who manage information technology and the many detectives in British fiction.

Unlike detective novels created by authors such as Agatha Christie and Dorothy Sayers in which all primary activity takes place in closed settings (sitting rooms, locked rooms, planes, trains or isolated castles) and features a clearly definable group of suspects, today's CIOs are confronted by an almost infinite array of technological and methodological choices.



Successful CIOs clear the fog, sculpt a quantifiable business case and get the business unit to focus efforts and choose directions.

But, similar to the detectives dealing with the unknown, CIOs are frequently asked to operate in a fog of strategic ambiguity (i.e., the business unit isn't sure what it wants). While directions may be misty and metrics vague, costs and paybacks are there to be found. Successful CIOs clear the fog, sculpt a quantifiable business case and get the business unit to focus efforts and choose directions.

Fictional detectives frequently operate independent of and outside traditional channels of power. In a similar fashion, the real world IS executive operates in a career channel separate from and, in many cases, not equal to the channels of power available to executives from other functional areas. This CIO apartheid can be eliminated only by demonstrating the ability to add value. Such value-sprints (e.g., rapid development projects that deliver strategic applications in less than six-month time frames) are major victories for the CIO.

Fictional detectives communicate in crisp, clean and colorful vernacular of the world in which they live. Technology managers are often branded as speaking in their own unique, acronym-rich, terse argot. The effective CIO steps out of that image and is able to communicate effectively in all the worlds he operates in — both technical and business.

Fictional detectives serve as intermediaries between the rich and poor, between the criminal and noncriminal and between the police establishment and the innocent. They are remarkably facile in their ability to move between levels of society. The IS manager is called upon to perform a sort of shuttle diplomacy moving between vendor and end user, technologist and business strategist, organization and third-party support provider.

Fictional detectives are prone to action. They are doers more than thinkers and are not just puzzle-solvers. They move through a rapidly changing world and act in it, testing both themselves and others. In a similar fashion, successful CIOs are implementation oriented.

The allure of detective fiction is that it introduces a chaotic world bigger than life's protagonist, who possesses methods to dispel chaos via heroic use of rational powers. Detectives come into a world of apparent chaos. They are charged with locating the killer, exorcising the evil and returning the world to the type of ordered tidy place we long for. In a similar fashion, the successful CIO is not a confusion creator but rather a confusion destroyer, sculpting a path designed to create the systems the business needs in a time frame the competition allows.

May is vice president of research and education at Cambridge Technology Partners in Cambridge, Mass.

Feature on high-tech gays doesn't belong in CW

For all these years, *Computerworld* has kept me informed. Now you devote front-page space to a subject that has absolutely no bearing on the industry or our profession. This article should have been published in one of the supermarket tabloids, not in a technical journal.

In the 42-plus years that I have been in information processing, only nonprofessionals have ever concerned themselves with anything but others' technical capability.

By publishing this nonarticle, you have lowered your standards.

Paul D. Lane
Informatics officer
American Embassy
Prague

Call me a stuffed shirt, but does *Computerworld* really want to be reporting on issues like gays in high tech? This lifestyle has no bearing on technical expertise or competence. I read *Computerworld* for up-to-date industry information and to keep abreast of new advances in technology. If I wanted stories like this, I'd read *People*. Keep up the good work, but keep it pertinent.

Daniel J. Yorksie
Indianapolis

Would I be too old-fashioned in inquiring why "Gays at home in high tech" took priority over other pieces for front page space? *Computerworld* is a professional and respected publication.

Why would you replace more important articles with a behavior that 85% of the world's population considers abnormal, if not deviant? Come on, let's get back on track!

James Browning
Bloomington, Ill.

I'm sure gays have their social clubs to support their deviant lifestyle, but I don't care to read about it in a publication I'm paying for. If it's going to be your practice to promote gay causes, I will have to cancel my subscription.

Harry Krabbe
China Lake, Calif.

Still on the outside

I've survived an outing "scandal" and recently was told through the grapevine that I don't fit the company mold because I'm not married, don't have kids, don't play golf and am not a member of the country club. I was told that people stay away from me because they're afraid they'll say or do something wrong and risk violating Equal Employment Opportunity regulations. They're just going to act like I don't exist.

I don't flaunt my gayness at work. I do a very good job, or at least I did until I realized I was being discriminated against from high levels. [My company] is [and will continue to be] no place for gay and lesbians to work unless there are major changes in management and the introduction of a mandatory diversity training program that openly addresses gay and lesbian issues.

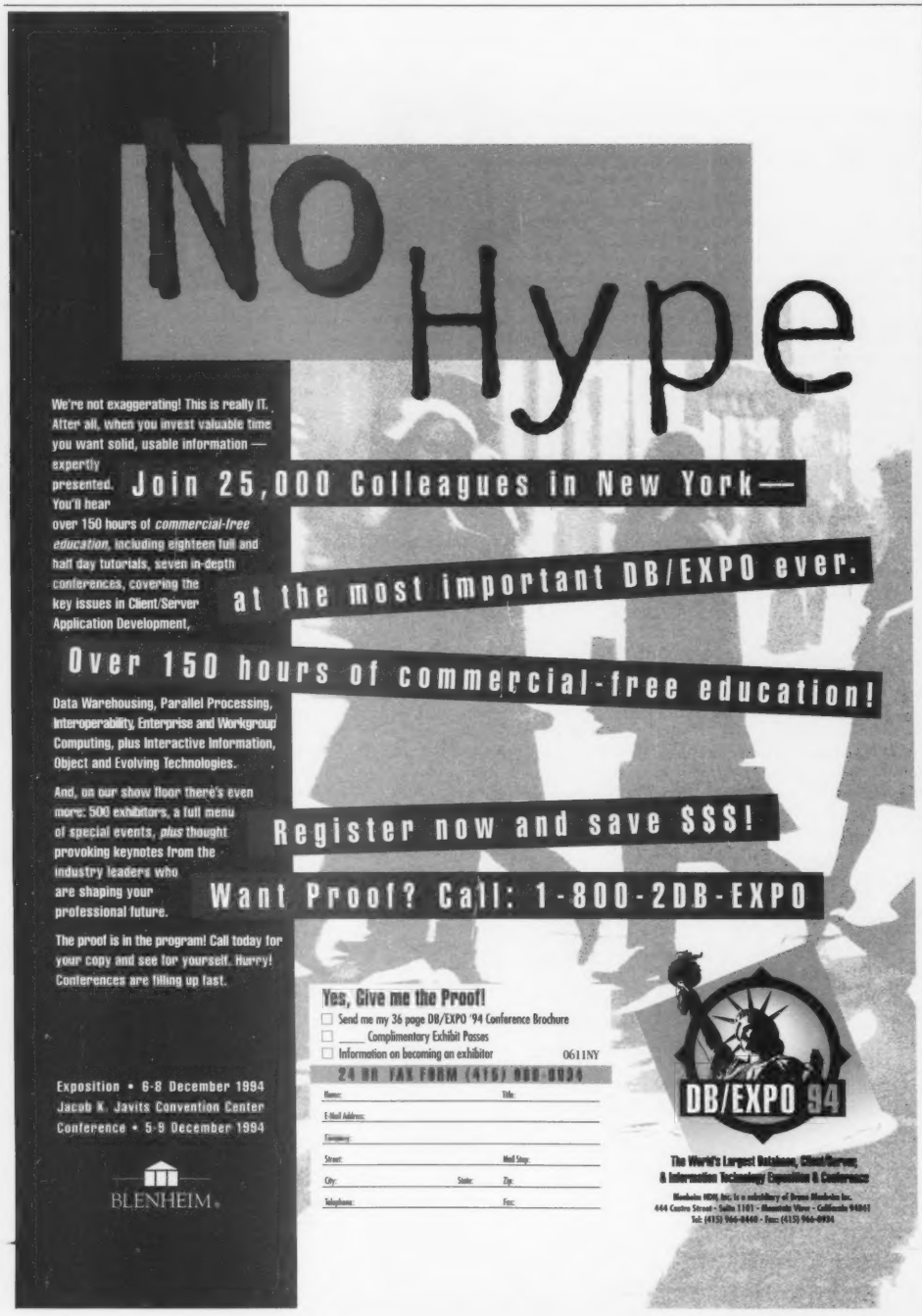
Brian Wolfe
Bartlesville, Okla.

Reaping benefits in a progressive industry

I am looking forward to the inclusion by my employer, Advantis, a joint venture of IBM and Sears, Roebuck and Co., of domestic partner benefits in its compensation package. When that happens, I will be earning what my heterosexual peers earn today.

I do recognize, as "Gays at home in high tech" reminded me, that I am in a most progressive industry, so I am happy to be able to write "when" and not "if."

Sarah Siegel
Schaumburg, Ill.



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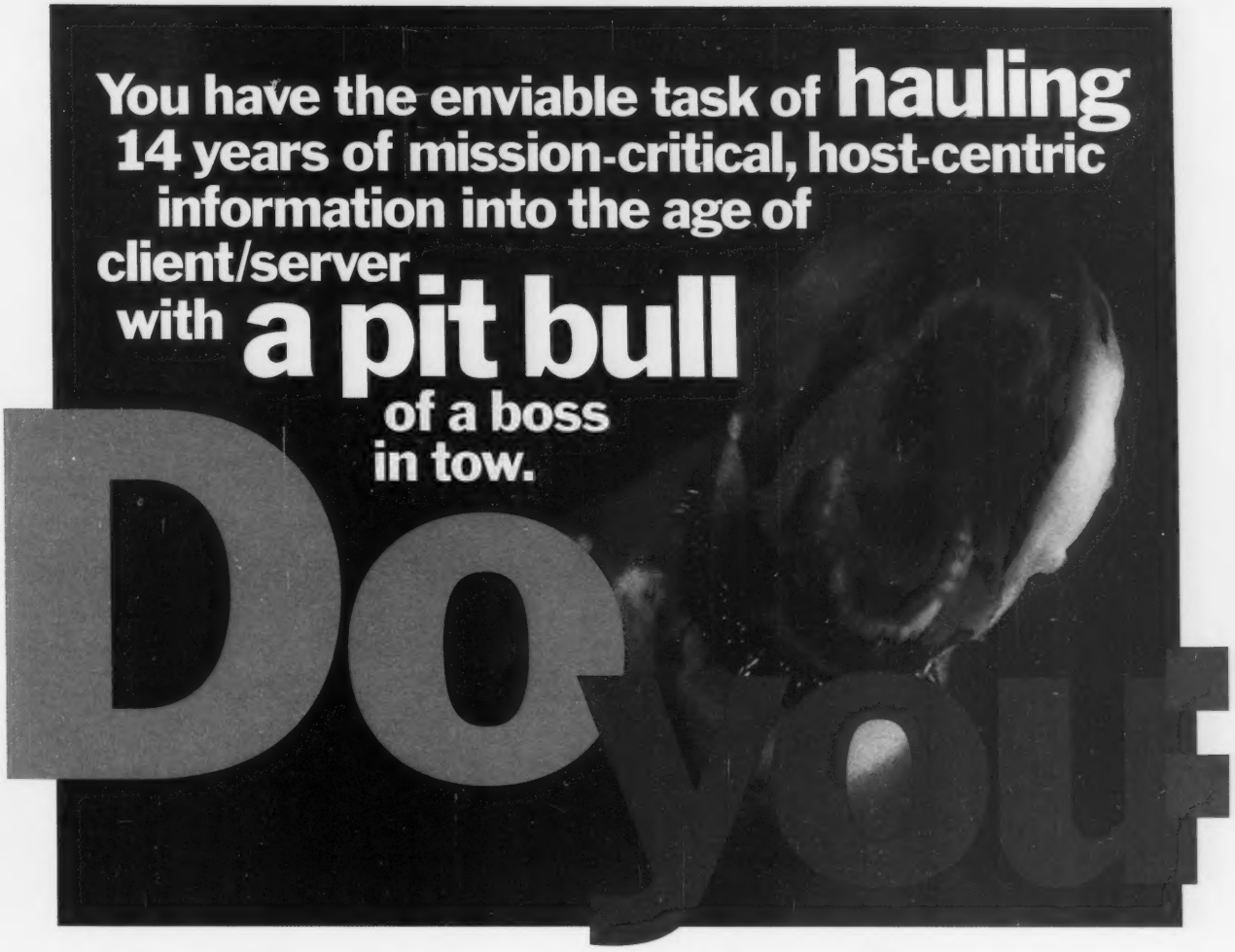

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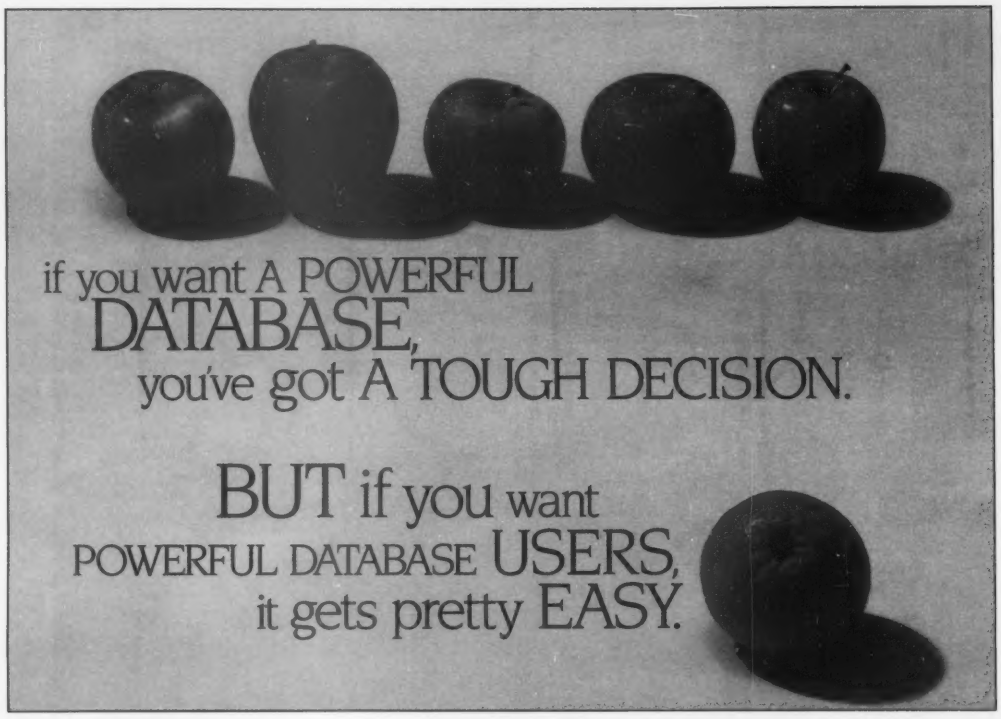

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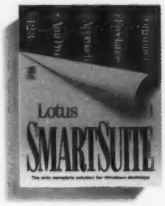

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Computers second on list for speedy interface

By Mark Halper

Desktop systems engineers think they have figured out a better way to shuttle data between CPUs and multimedia-age peripherals than what today's SCSI and integrated drive electronics (IDE) connections provide.

But advocates of the blazingly fast interface said it will probably emerge in consumer electronics gear first and in computers later.

The technology, known at Apple Computer, Inc. as FireWire and at the Institute of Electrical and Electronics Engineers, Inc. (IEEE) as proposed standard 1394, portends an average tenfold speed increase over SCSI and IDE [CW, Oct. 10].

"If it wasn't for the non-computer markets, I don't think 1394 would be happening," said Gary Hoffman, who recently left a 1394 development effort at IBM's Personal Systems division to start a 1394 development firm, Skipstone, Inc. in Austin, Texas.

Hoffman predicted that vendors of digital cameras, VCRs and televisions will soon use the interface to transport video images, which are increasingly coming from digitized sources.

Bryan Bell, interface products manager at Texas Instruments, Inc., pointed out that consumer electronics makers can more readily adapt the technology because they provide their own software and can easily coordinate driver development efforts. Computer makers, on the other hand, will have to rely largely on driver development efforts among third-party software providers.

What is more, Bell noted, most computer users today do not require 1394 speeds to support peripherals, although they will need the technology for emerging peripherals, such as video cameras that plug into computers. By comparison, a new breed of digital consumer video products is emerging that intrinsically requires a faster interface, he said.

Easier interface

The proposed 1394 standard could reduce users' integration headaches because the serial technology requires less user intervention than do SCSI and IDE parallel interfaces, said Gerald Marazas, a senior engineer at IBM PC Co. Serial technology does not require the clumsy placement and removal of "terminator pads" that parallel users worry about, he said.

Consumers first

Gerald Marazas, a senior engineer at IBM PC Co. in Raleigh, N.C., further explained that it is easier to implement 1394 in consumer electronics devices than in computers because the consumer technology requires less protocol support. Marazas is also chairman of the 1394 committee at the IEEE.

Users are clearly interested. With PC processor speeds approaching 100 MHz and storage devices reaching well into the gigabytes, PC users can be "stuck between a rock and a hard place" when they try to move data from storage to CPU, said Greg Chirichigno, a systems analyst at Lockheed Aerospace Corp.

That will especially hold true as users implement the large files that will define the video and sound programs of the multimedia era.

Serially speaking

FireWire, or the 1394 serial interface, outperforms SCSI and IDE in many categories:

	Data rate bit/sec.	Devices supported on 1 port	Cable length
FireWire p1394	100M, 200M or 400M	63	14.6 feet
SCSI	Up to 40M	7	20 feet
IDE	Approx. 6M	2	18 inches

Source: Adaptec, Inc., Milpitas, Calif.

Tom Martin, a product manager at Adaptec, Inc., an interface and card maker in Milpitas, Calif., said the progression from consumer devices to computer systems "is all going to take some time, maybe a year or longer."

As for any emerging technology, backers of 1394 will have to resolve differences of design opinion if they are to create a bona fide standard. One sign of divergence comes in the technology's nomenclature. Marazas said IBM is "absolutely not" using the moniker FireWire, noting, "I'm sort of wishing that name weren't being used."

Bell said the recently formed 1394 Trade Association will minimize differences and help ensure compatible development efforts.

The IEEE hopes to further engender conformity via ballots it will soon send out allowing members to vote on establishing the design as a standard.

Although Apple and IBM both demonstrated the technology almost a year ago, neither has committed to offering it commercially. Some Apple watchers said they believe the company plans to implement it by the middle of next year, when it will also replace its Nubus system bus with a Peripheral Component Interconnect system bus. Those moves together would give Power Macintosh a thorough plumbing overhaul.

Apple and IBM are also believed to be debating whether to include 1394 in the PowerPC Reference Platform (Prep). The companies are reworking the Prep specification into a form both agree on. Prep sets a design model for systems built on the PowerPC chip. IBM currently supports it, but Apple does not.

Reach Out's strengths spark remote shift

By Michael Fitzgerald

■ Out with the old, in with the new may be a truism, but the idea of dumping a standard software program for a whole new product — and the work and risk that go with it — makes most IS managers stick with what they know.

Still, under the right circumstances, a company will change. Entergy Services Co., the information systems arm of the multistate utility operator with $22.9 billion in assets, recently decided to replace Symantec Corp.'s market-leading remote access tool, PC Anywhere. The move meant buying 700 modem licenses and 4,000 network connection licenses.

"It would make my job easier to keep what we had in place and just update it," said Duane Rochelle, an information technology engineer at Entergy's Gretna, La., facility. "But [Symantec] said they don't plan to have anything for Windows 3.1," he added.

Rochelle got the Symantec news four months ago, and it was not what he wanted to hear. To keep moving ahead with new flextime goals, the company needed easier access. Many Entergy employees travel frequently, and others like being able to work from home if a child is ill or other special circumstances arise.

Dave Marshall

But change was necessary, Rochelle said. "PC Anywhere was causing us headaches. It modifies the .INI files, and this was causing problems like applications not working," he said. It also performed sluggishly, he added.

A Symantec product manager said he is at a loss to explain why Rochelle was told PC Anywhere for Windows 1.0 would not be upgraded because the product is under development and specifically addresses some of Rochelle's complaints.

But Entergy began searching for a different remote access package. It focused on two products: Reach Out from Ocean Isle, Inc. in Vero Beach, Fla., and Close Up from Norton-Lambert Corp. in Santa Barbara, Calif. It decided on Reach Out.

Rochelle said both products perform well and have strong networking support, and neither modifies the .INI file when installed. But Rochelle said Reach Out had better networking support, and for future considerations, he liked that it could support graphics of up to 1,280 by 1,280 pixels and 256 colors, which Close Up could not.

The change has done Entergy good. Rochelle said Reach Out seems almost made for Entergy, with features such as TCP/IP support, which fits well with Entergy's network. Reach Out will also serve as the standard dial-up communications package because it has terminal emulation and can support software and hardware modem pools.

"It had all the features we wanted, so the extra features were just lagniappe," Rochelle said, comparing it to the New Orleans "little bites" that are an extra touch at meals.

Not that life is perfect with Reach Out. For instance, it operates as a terminate-and-stay resident (TSR) program, a type Entergy would like to eliminate from its software configurations. An overdue, full-fledged Windows version of Reach Out is supposed to address this through the Windows Dynamic Link Libraries, but for now, Rochelle said, "at least it's a well-behaved 7K[-byte] TSR."

They could be giants

Rochelle said Ocean Isle's small size was also a problem, but the product met Entergy's needs so well it was worth the move. The company rolled out Reach Out to support personnel late last month and is in the process of installing it in other departments.

Some new users of remote control software said Reach Out cuts down on the hours they spend at the office. Lyn Rouchell, manager of business performance reporting at Entergy and a pilot tester, uses Reach Out on her home PC. She said it lets her cut down on the number of evenings she spends at the office.

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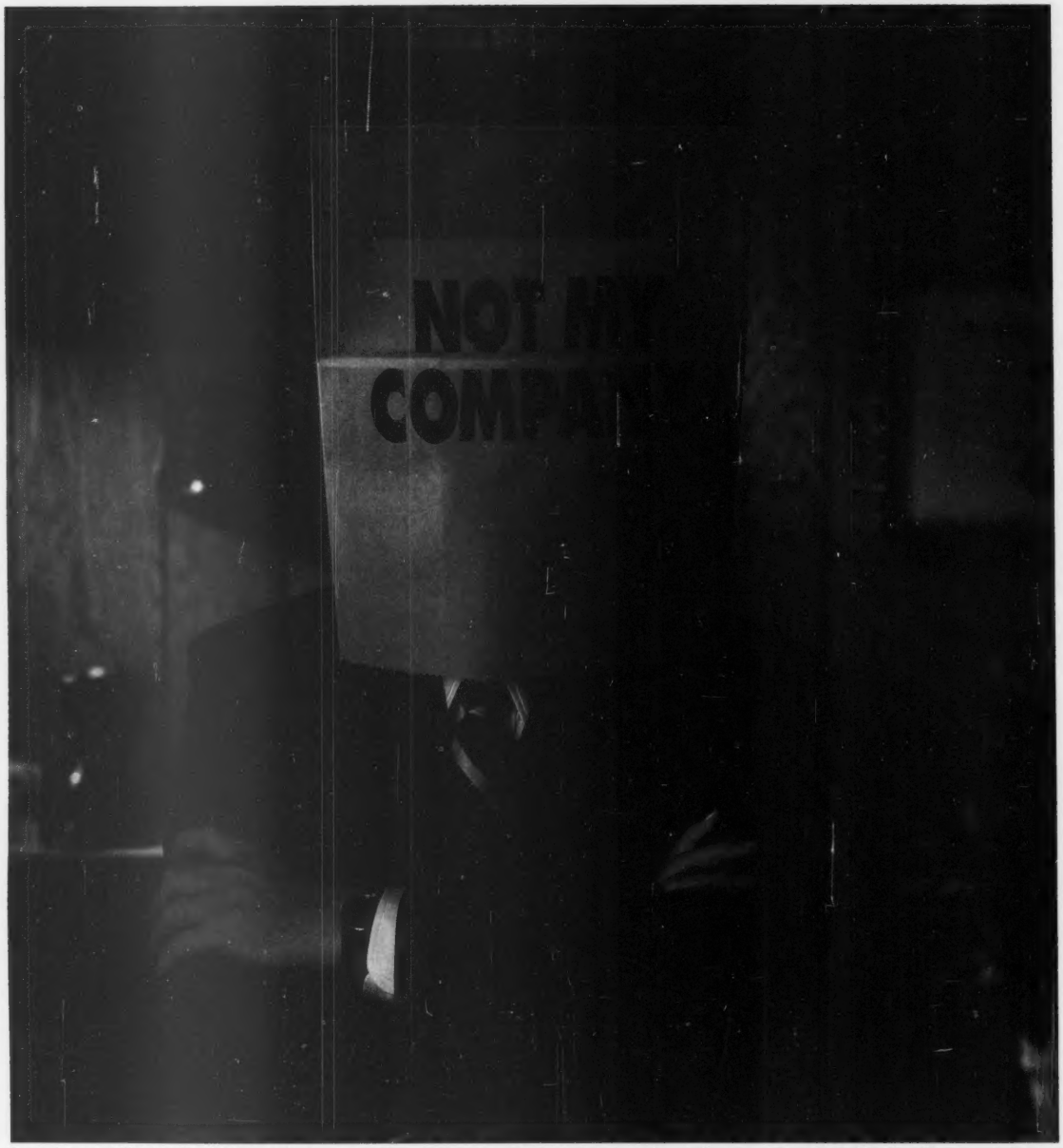

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SmartSuite takes integration a step further

By Jeff Angus

If the objective of your suite dreams is integration, Lotus Development Corp.'s SmartSuite Release 3.0 is the highest achiever.

SmartSuite Release 3.0 includes Ami Pro 3.1 (word processor), Approach 3.0 (database), 1-2-3 Release 5 (spreadsheet), Freelance Graphics 2.1 (presentation graphics), Organizer 1.1 (electronic daytimer) and ScreenCam 1.1 (training tool).

PRODUCT test DRIVE

At the highest conceptual level, SmartSuite's integration rests on SmartCenter, a utility that glues a user-configurable set of icons to the upper right corner of your active window. Though near-microscopic in size, these icons provide step-by-step help and animated tutorials specific to integrating your applications.

Lotus has done a decent job of implementing Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0, although drag-and-drop interactions offered uneven results. This is more than ameliorated by a more accessible form of integrating applications; 1-2-3 has an intrinsic menu to tap directly into Approach files using Approach features. Even better, the subset of database features has been very well chosen, appropriately complementing the innate abilities of 1-2-3.

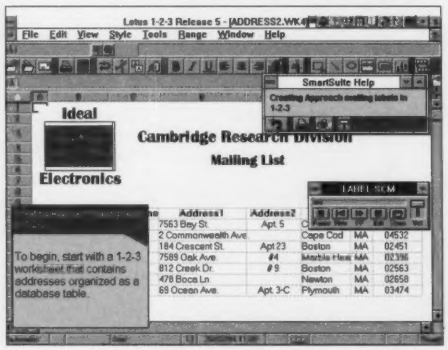
This alternative type of integration, where the database's features become part of the spreadsheet's menu structure if the database is installed, is akin to Microsoft's dream of componentization. The idea is that users assemble favored features from various competing vendors and create their own applications. Lotus has done an excellent job here.

For Notes users, OLE 2.0 integration has taken great leaps, allowing cooperative workgroups to stitch files into Notes applications. Users can also share files by using SmartSuite applications' built-in ability to access electronic mail (CC:Mail, Messaging Application Programming Interface- and Vendor Independent Messaging-compliant systems).

This suite, like Microsoft's Office, poses some challenges when more than one of its programs is open at once. First, it requires an absolute minimum of 6M bytes of RAM to run multiples. Second, and more of a hurdle, both suites slowly draw down on Windows' most restricted resource: something called GDI, which has limited capacity and will require the user to restart Windows after too much application switching.

The main pieces of this suite share some features new to the Lotus line. For one thing, Approach, 1-2-3 and Freelance Graphics each has a sharp set of application templates.

Ami Pro, 1-2-3 and Approach all have "fast format." The user selects a formatted object, clicks the fast format button and selects the object being reformatted to match all the specifics of the original.



Lotus built SmartCenter icons *into SmartSuite to provide tutorials that help users integrate applications*

Organizer 1.1 is an ordinary Windows calendaring, to-do and contact manager. It drifts from the integrated model of the rest of the suite in design and the ability to exchange information. No Windows contact manager has come close to replacing the best DOS offerings.

A suggestion to Lotus for SmartSuite Release 4.0: Put effort into Organizer and make it the centerpiece of the suite. Give it more consistency with the other pieces and better integration. That would win it the battle that might win the office suite war.

Training tool

The SmartCam 1.1 utility is new to the suite. The program efficiently captures screen activity and audio (if you have a sound recorder). Compression allows users to set up a tutorial server on the network and let people run the tapes from it, making lessons easier to distribute. ScreenCam would be better able to meet its training goal if Lotus included editing capabilities. That way users could put together multiple pieces with effects and trim extraneous material.

SmartSuite 3.0 for Windows costs $795 (list price). Upgrades and competitive products cost $299 for an unspecified time and then rise to $595. Lotus' order number is (800) 343-5414.

Angus is a project director at The Data Works Ltd. in Seattle.

Jeffrey Henning

Suites sway user habits

Many IS directors may wonder if their users are actually using all the applications in those suites they're buying. They may have found that some users have no need for the presentation package the vendor threw into the bundle. Other users may have been quite vocal in their demand for WordPerfect and are now running WordPerfect with Microsoft's Office suite, meaning the company is paying for two word processors for each user.

But the good news for vendors is that users are being won over to the benefits of their suites in ever increasing numbers. Few users are loyal enough to stick with any one application now that suites offer a comparable application with tight integration to other apps in the suite.

Some 90% of suite owners use the word processor supplied with the suite, and another 90% use the spreadsheet. As a result, suites coexist with stand-alone applications less often.

According to Will Reynolds, director of development for SmartSuite, the days of users mixing and matching applications is gone. Best of breed has lost out to the compelling economics of suites. Mike Fulton, group manager of research at Microsoft, says users are much more concerned about using applications together to share data, which creates a greater need for products from one vendor.

According to Fulton, 72% of Office users typically have two or three applications open simultaneously; some 13% typically have all the applications open at once. The remaining 15% use only one application at a time.

Users will use more and more suite applications simultaneously in the future as they take advantage of OLE and as they try to satisfy their suite's sweet tooth for RAM.

Besides shifting from past products to suite apps, users are starting to take advantage of those additional applications in the suite. Amazingly, some 70% of suite users now use the presentation package, up sharply from just 20% two years ago. The higher usage is because presentation packages such as Freelance and PowerPoint are not just for presentations anymore.

End users employ these packages for organizational charts, simple diagrams, meeting agendas, discussion outlines and handouts. Some even use their presentation package for brainstorming, outlining and generating concepts. In fact, presentation packages are now rarely used for making overheads or slides, the assumed traditional use of the products, but are used 80% of the time just for printing handouts.

Databases in your future

End-user databases are currently used by fewer than half of suite users. Lotus wants that proportion to increase and so is bundling extensive start-up templates into Approach 3.0. With many users relying on makeshift databases built in spreadsheets, it seems that the number of end users making use of databases will grow dramatically in the future, just as end-user use of presentation packages grew. (Lotus has found that Approach is a great beachhead into accounts. Once an account has purchased Approach, it is fairly easy to sell it SmartSuite as well.)

One application that is not used extensively is the mail system. Only about 17% of suite users install the mail application. This is not surprising because mail systems are often chosen by centralized IS; suites are chosen by departments or even individuals. Due to the low usage of E-mail, Lotus withdrew CC:Mail from SmartSuite, but Microsoft has no plans to unbundle Mail from Office.

Lotus and Novell/WordPerfect now include personal information managers (PIM) in their suites. Although this is conjecture, Microsoft probably will not follow suit because it will bundle its WinPad PIM into the operating system with Windows 95. This is a Trojan horse to get people using PIMs so they will want to use the Microsoft PDA/Mobile companion operating system.

Now that databases have succumbed to suites and personal organizers are succumbing, many software vendors fear suites will expand to include more and more application categories. Suites are seen as a company killer. For example, the rise of suites has wounded WordPerfect, Borland and Software Publishing Corp., maker of Harvard Graphics.

Actually, the pendulum is swinging the other way, and suites will begin to be company makers, offering new opportunities for independent software vendors and value-added resellers. Thanks to OLE and suite scripting languages, it will be possible to add vertical-market functionality to suites, allowing you and your suppliers to make suites more appropriate to your industry and your users' needs. This is opening up a whole new area for application development, which will make suites seem even sweeter to users. But that's food for another column.

Henning is an analyst atconsulting group Constellation International in Norwell, Mass. He can be reached by CompuServe at 74774,157.

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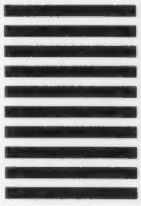

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Conner Peripherals, Inc. has announced the Conner TapeStor 420, a 420M-byte data protection system for PCs and workstations.

According to the Costa Mesa, Calif., firm, the Conner TapeStor 420 supports ¼-in. media and QIC-Wide media.

Conner Backup Exec software is included with the product and protects data on stand-alone DOS or Windows PCs or networked servers in Novell, Inc. NetWare environments. A FastSense feature lets the tape drive automatically sense the speed of the host system and use the fastest available data transfer rate.

The Conner TapeStor 420 internal system costs $199, and the external system costs $369.

▶ *Conner Peripherals*
(714) 641-1230

Samsung Electronics America, Inc. has announced the NoteMaster S394ST notebook.

According to the Ridgefield Park, N.J., company, NoteMaster S394ST comes with either a 75- or 100-MHz Intel Corp. I486DX4 microprocessor and is easily upgradable or expandable for mobile computing needs.

NoteMaster includes PCMCIA Type II and III slots and an optional CableMaster I port replicator that replicates parallel, serial, external monitor and keyboard ports so the notebook can operate as a desktop PC.

The product's energy management system includes a hibernation mode, a suspend/resume function, a smart sleep function and a low battery alarm.

NoteMaster S394ST costs $4,999.

▶ *Samsung Electronics America*
(210) 229-4000

Revered Technology, Inc. has announced Power Cruiser, a presentation notebook computer.

According to the Camarillo, Calif., company, Power Cruiser is a multimedia color notebook with a detachable monitor that can be converted to an LCD projection panel for use with overhead projectors.

With multimedia options that include an internal SCSI card, an internal audio card, an external multimedia adapter and a portable docking station, users can create full-motion multimedia presentations and interactive demonstrations as well as hold videoconferences.

Pricing ranges from $6,795 to $7,795, depending on CPU.

▶ *Revered Technology*
(805) 445-6655

Industrial Data Systems, Inc. has announced PowerCase 8000, a portable, expandable computer.

According to the Houston firm, PowerCase 8000 has four uncommitted slots for expansion boards, four drive bays, 8M bytes of RAM, an active-matrix LCD display and a 420M-byte hard disk. The drive bays can house disk drives, CD-ROM drives and removable drives.

PowerCase 8000 costs $4,975 for a standard configuration.

▶ *Industrial Data Systems*
(713) 821-3200

Proxima Corp. has announced the Ovation+ series of active-matrix LCD projection panels.

According to the San Diego company, the Ovation+ series, comprising a data-only model and two multimedia models, features up to 800- by 600-pixel resolution and signal recognition that eliminates the need to adjust the panel.

The LightBoard function lets users draw directly on the screen. The software can be controlled remotely via Cyclops, an optional interactive pointer.

Prices range from $4,995 to $6,695.

▶ *Proxima*
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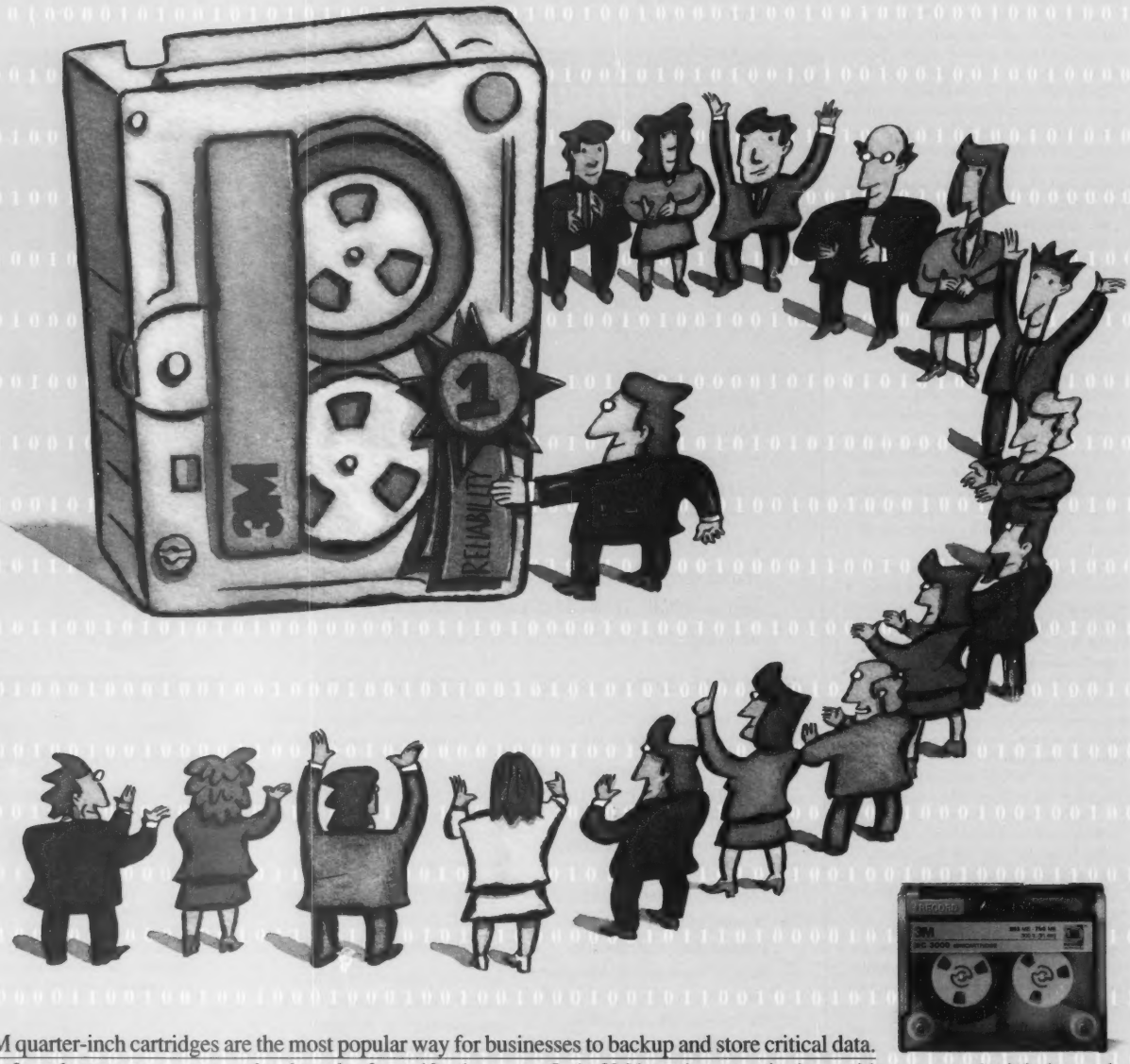

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Quake-proofing

Unix boxes measure Golden Gate's mettle

By Jean S. Bozman
SAN FRANCISCO

In June 1935, the Golden Gate Bridge received its very first seismic test: A dozen construction workers on the south tower clung to its steel sides as an earthquake swayed the tower 16 feet in each direction. Even though the bridge survived that quake, engineers scrambled for a long-term solution to the swaying and decided that the bridge's steel cables would do the job once they were in place.

When architects Charles Ellis and Leon Moisseiff designed the Golden Gate in the 1930s, they did all of their calculations on paper, and there were no major earthquakes to guide structural analysis of so many tons of steel in motion. "The designers at that time were using slide rules and hand-cranked calculators," said Daniel Mohn, chief engineer of the Golden Gate Bridge District, which maintains the 1937 landmark 9,000-foot suspension bridge spanning San Francisco Bay. "They didn't have the opportunity to run multiple alternative designs."

Unix workstations *are used to recalculate the impact of a major earthquake on the Golden Gate*

Sturdy test

Engineers are now using Unix workstations to recalculate the force of a major earthquake on the famous span. They are using Unix workstations from Sun Microsystems, Inc. and Digital Equipment Corp. to retrofit the Golden Gate so it will remain standing after a big shaker hits the nearby San Andreas Fault. One team from ISEC, Inc., a San Francisco engineering firm, ran off 10 simulation scenarios of seismic forces, showing that a magnitude 8.3 earthquake would destroy the south approach's trestle (see photo). There are other scenarios, too. "The [middle of the] span could turn into a 4,200-foot battering ram that hits the tower right at the tower's knees," Mohn said.

Concern about the Golden Gate's fate began five years ago with the October 1989 Loma Prieta earthquake, which was centered 60 miles south of the bridge. That quake shook and damaged the Bay Bridge that connects San Francisco with Oakland, Calif. "We suffered no damage but looked around and saw damage to other structures," Mohn said. "We've always known that structures designed prior to the advent of modern seismic engineering were vulnerable, but we didn't know how vulnerable."

Under contract

The bridge district has contracted with several Bay Area firms since 1991 to take on pieces of the Golden Gate retrofit job, including T. Y. Lin International in San

Golden Gate, *page 54*

ON SITE

Golden Gate Bridge

Operated by Golden Gate Bridge District
Annual budget: $77 million
Employees: Approx. 865

Challenge: To analyze bridge's vulnerability to damage from major earthquakes on the San Andreas Fault, less than 10 miles to the west.

Strategy: To employ several engineering teams, each using Unix workstations, to calculate seismic forces and design remedial bracing.

Results: Designs are nearly complete after two years of engineering work. The retrofit program is due for public bid in early 1995, with construction due to start later in the year.

Unisys, PeopleSoft pair

Unlikely duo takes on client/server computing market

By Thomas Hoffman

What were the odds that Generation X would embrace Tony Bennett? The love affair between 1990s youth and the Cold War crooner once seemed unthinkable.

What were the chances that staid Unisys Corp. would forge a marketing alliance with a hip, young software developer such as PeopleSoft, Inc.? About the same, and the oddsmakers were wrong both times.

For PeopleSoft, a Walnut Creek, Calif.-based developer of human resources and financial applications, the agreement represents an opportunity to expand its presence in the public sector, an area in which Unisys has long been a dominant player. For Unisys, the alliance is a clear example of how the Blue Bell, Pa., computer maker is trying to revitalize its fledgling client/server computing strategy.

Unisys' James A. Unruh: *With cost cutting done, it's time for growth*

Although the worldwide client/server market has exploded in the past few years, Unisys' open systems business has actually declined slightly in the past five years, according to Dewaine Osman, vice president of corporate planning and business development. "Our open systems [business] hasn't performed as well on the execution side as our services business has," Osman said.

Client/server focus

With its cost-cutting initiatives stabilized, Unisys is now pushing hard for profitable revenue growth, a goal that Unisys Chairman and Chief Executive Officer James A. Unruh is targeting the current fiscal quarter. Much of that growth is centered on the company's prosperous information services business, which has experienced 20% revenue gains in the past three years and is expected to account for 25% of Unisys' $7.4 billion in annual sales. Osman and other company executives said recent alliances such as the PeopleSoft agreement will enable the vendor to achieve single-digit growth for its client/server business.

Earlier this year, Unisys announced plans to base future distributed systems development on Microsoft Corp.'s Windows NT environment. In June, the company tapped former Northern Telecom, Inc. executive Alan Lutz as president of its Computer Systems Group in an effort to breathe life into its client/server business.

Through its efforts, Unisys is attempting to leverage its strengths in high-volume, on-line transaction processing by pushing enterprise-wide client/server computing, and its 2200 and A Series mainframes are being positioned as enterprise servers. To date, those efforts have provided mixed results. In the past two years, Unisys has won $400 million in new business in Eastern Europe, where it has created a lucrative niche in branch banking automation. But Unisys' emphasis on the NT environment has rankled many of its loyal CTOS workstation users, who fear future development of the Unisys environment may suffer as a result.

"I commend their whole client/server strategy, but I don't think they market it well enough," said Robert A. Kilgore, a systems analyst in budget management services at the Texas Department of Human Services in Austin. Kilgore recently used Unisys' Mapper System for Windows application development environment to create an executive information system for agency managers. He said Mapper System is as robust or more powerful than Powersoft Corp.'s PowerBuilder application tool kit and other well-established client/server development suites.

Piece of the pie

Last year, Unisys' departmental server and desktop systems business contributed roughly 10% of the company's $7.7 billion in total revenue.

Selling power?

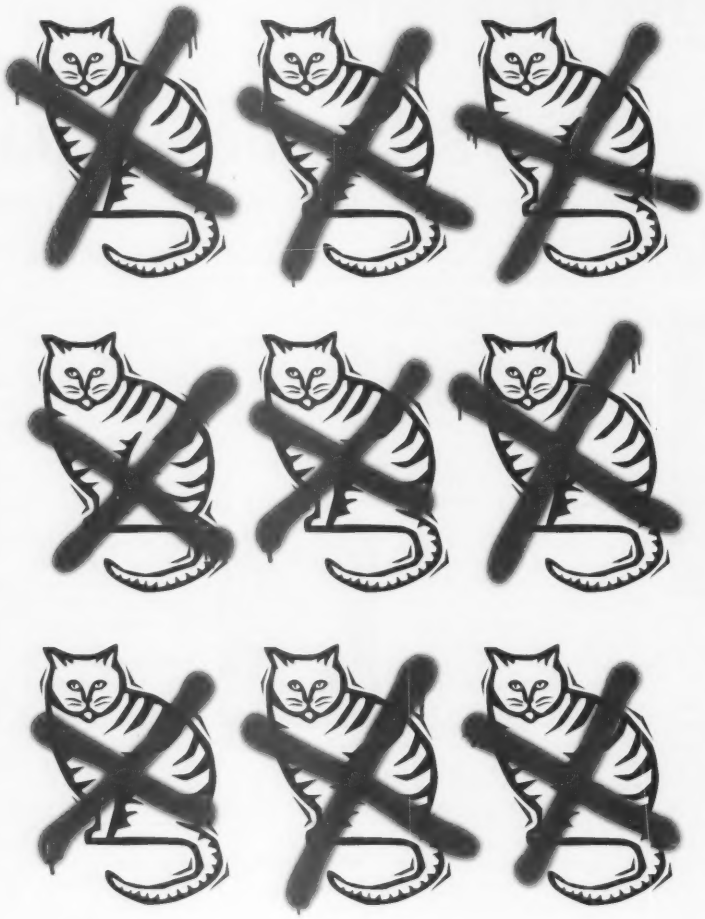
But in Kilgore's eyes, Unisys has not been getting the word out to prospective customers. "I don't think Unisys knows how to sell squat, other than behemoth mainframe computers," he said.

Unisys must also overcome its historical distinction as a mainframe vendor. "I think they suffer a lot from a lackluster image, which doesn't really credit their fine technical offerings," said Sally Cusack, an analyst at The Standish Group International, Inc., a Dennis, Mass., consultancy.

Still, adding software partners such as PeopleSoft should give Unisys' client/server business a shot in the arm. Last year, the state of New York's Department of Civil Service was looking to migrate its PeopleSoft human resources/benefits enrollment application from an IBM mainframe environment to a Unix-based platform.

Although it had considered hardware from Hewlett-Packard Co. and Sun Microsystems, Inc., the agency eventually decided on Unisys' U 6000 Unix platform. Unisys was chosen primarily because the conversion had to be done quickly, and the department was able to expand upon an existing Unisys 2200 Series mainframe contract, according to Ric Barre, a project manager at the agency in Albany, N.Y.

Even though he described the Unisys contract as a "dollars-and-cents decision," Barre said the agency eventually tapped Unisys' consulting services to help convert from IBM's DB2 to an Oracle Corp. relational database management system. Barre said the Unisys consulting services were key to the conversion project, which was completed in July. "They provided expertise in areas where we had none, like Oracle and Unix experience. Quite frankly, I'm not sure I would have tried [the conversion] without them," Barre added.



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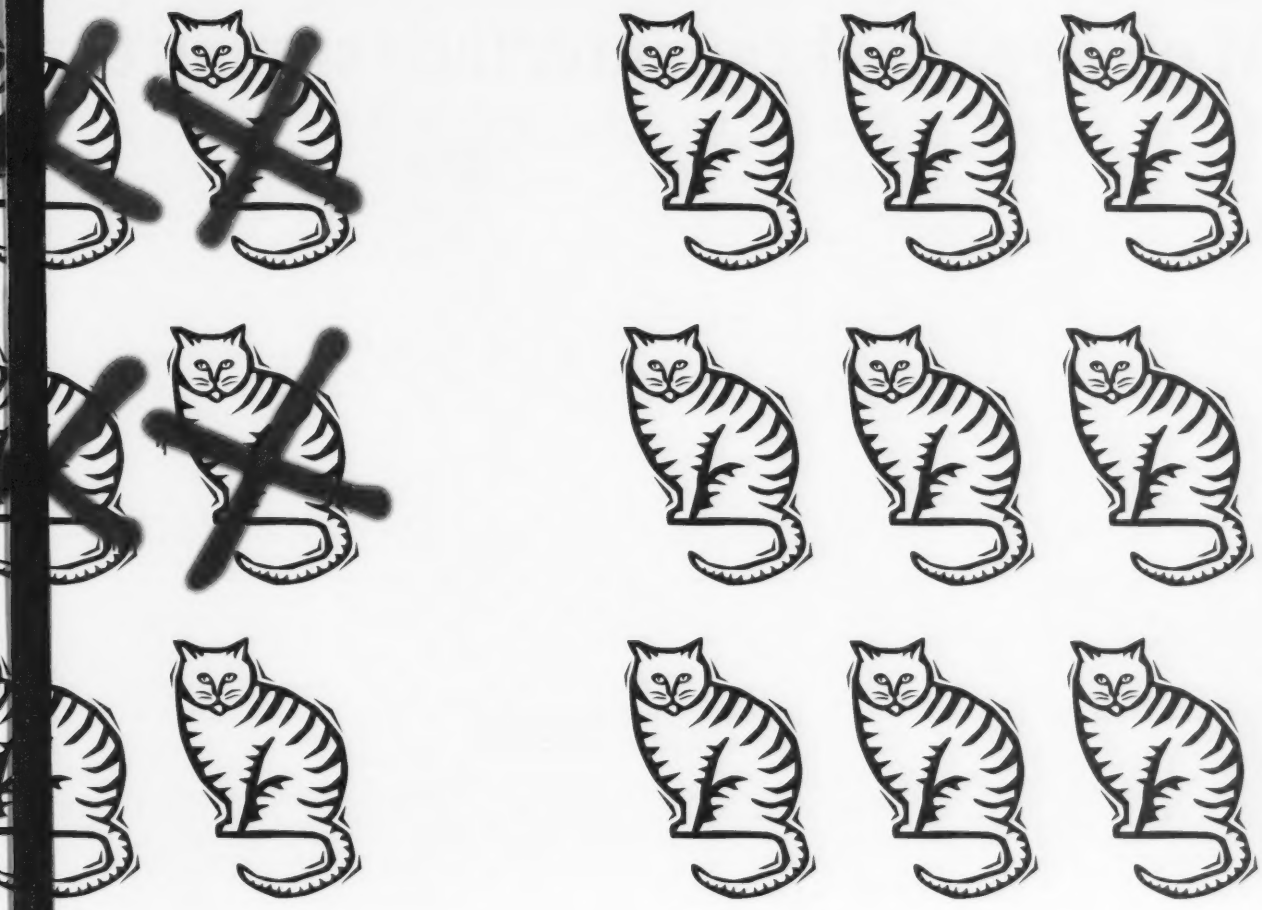

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Interface standards

IBM pledges desktop interface support

By Steve Moore

IBM's recent promise to support the Desktop Management Interface (DMI) in its AIX platform signaled that users will have a single standard for integrated, remote management of both desktop PCs and Unix servers.

DMI is a standard interface through which LAN-attached computers can provide information about themselves to network and systems management applications.

Thus far, most DMI activity has centered around PCs running Windows and other single-tasking operating systems. But at this month's Desktop Management Task Force developer's conference in Boca Raton, Fla., IBM said it would implement DMI in its AIX and OS/2 operating systems by next March.

"This gives me a warm, wonderful feeling that we're going to stop platform paralysis and that the industry is really going to play together nicely and come to a standard everyone can interoperate with," said Cheryl Currid, president of Currid & Co. in Houston.

Recent announcements of DMI support by Novell, Inc. and Apple Computer, Inc. also added significantly to DMI's momentum, Currid noted, adding that third-party Unix systems management vendors would do well to hop on the DMI bandwagon.

Entering the enterprise

Users and analysts agreed that moving DMI to the Unix platform makes it applicable to enterprise networks as well as departmental LANs because it will allow Unix servers and PCs to supply consistent information for use by local and centralized management applications.

"The biggest thing I worry about is that utility products for management of databases, networks and systems can be an impediment to using new operating systems and databases," said Mike Prince, MIS director at Burlington Coat Factory Warehouse Corp. in Lebanon, N.H.

Having DMI as a standard layer between management applications and all the underlying devices being monitored "is one approach to how one would become independent of, say, the operating system release," Prince observed.

SunSoft, Inc. last March promised DMI support for its Solaris Unix operating system, but "I haven't seen the whites of its eyes yet," Currid said.

"We will have prototype code available in November. In 1995, we plan to either put the DMI into the next Solaris release or make it available as an external library," said Joe Matibag, senior product development manager at SunSoft's enterprise management business unit.

Built-in DMI support on Unix platforms will "absolutely be a help beyond Unix systems management tools today," said Ray Mok, a senior computer engineer at Bay Area Rapid Transit in Oakland, Calif. "It doesn't make any difference whether it's Unix, OS/2 or Windows, you still want to control them as much as you can," he added.

Over time, DMI "will have a significant impact on the way network management organizations and work processes are structured," said Mary Johnston Turner, a principal consultant at Northeast Consulting Resources in Boston.

With a broad range of network and systems management information accessible from a single console, "the roles of systems administrators and LAN administrators are likely to blur considerably," Turner said.

Information highway

DMI is a standard interface through which LAN-attached computers can provide information about themselves to network and systems management applications. The DMI architecture includes a local Service Layer program that collects information about PC hardware and software and provides that information to management applications upon request.

Golden Gate Bridge

CONTINUED FROM PAGE 51

Francisco, Imbsen & Associates, Inc. in Sacramento, Calif., and Sverdrup Corp. in Walnut Creek, Calif. The entire retrofit is expected to cost $147 million. Bids for repair work will be allowed when bracing designs are finished early next year. Construction should be under way by late 1995 and completed by the year 2000, Mohn said. Engineers from Stanford University and the University of California at Berkeley are reviewing the computer-generated retrofit designs.

A simulation showed a magnitude 8.3 earthquake would destroy the south approach's trestle.

David Liu, director of earthquake engineering at Imbsen & Associates, said his firm began writing its own software models for seismic damage evaluation in the 1971 San Fernando earthquake in southern California.

Learning experience

"Every time there's an earthquake, there's a surprise," Liu said last week. "We're still learning. There are a lot of different types of waves contributing to the ground motion." Even the best motion data, plugged into computer models, is modified by other factors. One of these is the frequency at which any structure resonates like a tuning fork — known as its natural harmonics.

Imbsen & Associates, which is working on the northern approach and suspension portion of the bridge, develops homegrown Unix code on Sun workstations and crunches numbers on two Sun SPARC 10s, Liu said. Once analysis and designs for retrofitting are completed, they must be converted on Intel Corp. I486-based PCs into Autodesk Corp.'s AutoCAD format for delivery to the bridge authority and contractors, Liu said.

At ISEC, which analyzed the bridge's south approach with a Sun SPARCserver 1000, the firm's solution for a retrofit was to deflect the horizontal motion, said ISEC President Jawahar Gidwani. "We allowed the arch to rock on its foundations, but we controlled the rocking [in our simulation] by putting guides at the base," he said. "So it goes up and down, only."

No matter what is done to prevent seismic damage, the Golden Gate Bridge must retain its classic look.

"The bridge is a national historic monument," Mohn said. "As such, we must [ensure] that with everything we do to the bridge, all of the architectural value will be preserved." Charles Ellis would approve.

Briefs

Unisys wins order

Telecom Australia has placed a $4.6 million order with **Unisys Corp.** for an imaging system designed to capture, process and store the company's accounts payable information. The contract includes Unisys' InfoImage Folder software and several Unisys U 6000 Unix servers.

HP drops NetServer prices

Following recent reductions in its desktop computer prices, **Hewlett-Packard Co.** announced it is rolling back prices by up to 13% on its NetServer systems and by a substantial 34% on several NetServer accessories. Under the new rates, a midrange HP NetServer 4/66 LF Model 1050 that used to cost $4,699 will now sell for $4,519; the price for a 1G-byte fast SCSI-2 hard drive dropped from $1,119 to $929.

NetWare products debut

Saber Software Corp. and **McAfee Associates, Inc.** introduced new versions of their software license metering applications. Saber's Enterprise Application Manager 5.0 and McAfee's SiteMeter 5.0 are aimed at users of Novell, Inc.'s NetWare. Both now support server-based metering of DOS, Windows and Macintosh applications without requiring software agents on desktop workstations. SiteMeter also supports preferential application access for selected users as well as the ability to place time-based restrictions on access to designated applications. New features in Enterprise Application Manager include enterprisewide software license borrowing and queuing. Both products are slated to ship in November.

DG teams with SAP and Oracle

Data General Corp. has teamed with **SAP AG** and **Oracle Corp.** to ship by year's end an Aviion server-based system that includes SAP's R/3 suite of financial applications and Oracle 7.0 as the back-end processor.

Berkeley ships Internet software

Berkeley Software Design, Inc. in Colorado Springs said last week it is shipping a $545 BSD/OS Unix Internet Gateway Server software package that will create a full Internet node on Intel Corp.-based PCs.

Signet signs on with Unisys

Signet Bank in Richmond, Va., has purchased a Unisys check imaging system under a contract valued at $2.5 million. Under the agreement, Unisys will provide its InfoImage Item Processing System software and several Unisys U 6000 Unix servers. Signet is planning to use the systems to streamline record keeping and improve check fraud prevention.

Microsofts casts for resellers

In an effort to lure **Novell, Inc.** resellers to the Windows NT and BackOffice server camp, **Microsoft Corp.** is conducting seminars in 33 cities that include an offer to sell participants a development copy of all the server products for $99. Novell resellers that participate in the seminars, which cost $999, are also eligible for a free 60-day trial of an AT&T Global Information Solutions Dual Pentium server, Microsoft said.

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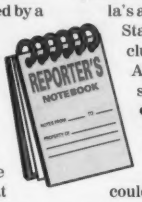
When's the best time to upgrade your network and get a $4,700 workgroup productivity pack, Free?

NetWare

Surprises haunt SMP

Unix Expo was a get-down-to-business affair earlier this month, as users worked out operational issues associated with downsizing mainframe applications to run on Unix SMP servers. But unplanned events also highlighted the proceedings, including the following:

• **IBM**'s well-planned rollout of symmetrical multiprocessors based on the PowerPC chip was slightly marred by a computer glitch. A demonstration of IBM's new human-centric interface for Unix workstations, which uses an animated "talking head" called XActor to explain start-up procedures, went on a stuttering binge. "We are capable of stepping out on the leading edge, and sometimes that edge is a little bit bloody," said a startled Tony Santelli, general manager of IBM's Power Personal Systems group, who showed XActor on a new IBM 40P entry-level workstation.



• An unplanned turn of a different sort struck **Motorola**'s press conference. The company said it planned to manufacture 250,000 to 500,000 PowerPC systems next year. But "Unigram-X" publisher Maureen O'Gara questioned whether the market could absorb that many systems, especially if all of them ran IBM's AIX 4.1 Unix operating system. "I did say we would be announcing different operating systems, just as it is IBM's desire to do the same," countered Edward Staiano general manager at the Motorola Computer Group. Top candidates for Motorola's alternative system software, Staiano later told reporters, include Microsoft's Windows NT, Apple's Mac OS and Sun Microsystems' Solaris.

• **Oracle** CEO Lawrence J. Ellison was questioned about whether Oracle's media servers and interactive TV software could threaten individuals' right to privacy by collecting data on viewing habits. "The technology can do whatever you want it to do," Ellison said, adding that responsibility for its use falls to legislators. "The technology can gather all the information. The technology can keep all the information private.... This is very much a public policy issue. It's not going to be decided by people like me who create technology." — *Jean S. Bozman*

Wang adds imaging to Notes

By Mary Brandel

■ Users running Notes need imaging, too. At least that is the hope of Wang Laboratories, Inc. and several other imaging vendors that are integrating their software with Lotus Development Corp.'s groupware product.

Although ViewStar, Inc., FileNet Corp. and IBM are expected to follow suit, Wang is the first to introduce software intended to extend heavy-duty imaging capabilities to Notes workgroups.

Without leaving the Notes environment, users can use Open/image for Lotus Notes to access and archive images on Open/image or Wang Integrated Image System servers, Wang said.

Imaging Groupware

For instance, images generated by process-intensive workers in accounts payable or loan processing units can be reviewed by, say, marketing analysts looking for particular trends.

"This shows where Notes stops and FileNet and Wang start," said Scott McCready, an analyst at International Data Corp./Avante Technology in Framingham, Mass. For instance, it makes sense to give a Wang-level product to insurance application processors. "But giving the same desktop to people who do underwriting doesn't make sense. They don't want to see one individual policy. They want insight into the overall underwriting risk," he said.

Wang's recent announcement, and the expected introductions to follow, are made possible by Lotus' new version of Lotus Notes:Document Imaging (LN:DI). Previously, LN:DI let users attach images to Notes documents. But the images were stored in the Notes database, which gets bogged down by a large number of images. With this new version, Release 2.5, the images remain stored in the existing imaging system.

Users can also view non-Notes images through a "viewer" developed by companies such as Watermark Software, Inc. However, they have to leave the LN:DI environment to do so.

"Users don't want two viewers on their desk," said Michael Loria, vice president of marketing at Wang. With Open/image for Lotus Notes, all viewing takes place in the LN:DI environment.

No immediate need

At least one user said he could see the value of extending imaging to his Notes users. But implementation would be a year or two away, said Mark Hurkamp, director of customer service at Inova Health System at Fairfax Hospital in Springfield, Va. "If you're doing something like imaging, throwing Notes on top of it seems risky," Hurkamp said.

Down the road, McCready said, Wang will likely develop a product that is more tightly integrated with Notes.

There are two parts to Open/image for Lotus Notes. Open/image Navigator gives Notes users access to Open/image servers. Already shipping, it costs $99 per client. Open/image Gateway lets users archive the images on the Open/image server. It will sell for $2,500 per server and is scheduled for availability at the end of the year.

Programmed Logic Corp. has announced the Desktop File System, disk doubler software for users of SunSoft, Inc.'s Solaris 2.x operating system.

According to the Somerset, N.J., firm, the Desktop File System uses transparent file compression and an efficient disk layout strategy to increase the disk capacity of computers running Unix.

The product works beneath the operating system, compressing and decompressing data as it is written to the disk. Administrative utilities include high-speed compressed backup and restore commands, file versioning, undelete administration, compression statistics and optimization utilities.

The Desktop File System costs $149 for the client version and $349 for the server version.

▶ *Programmed Logic*
(908) 302-0090

Digital Equipment Corp. has announced the StorageWorks RAID Array 210, a controller-based disk array.

According to the Maynard, Mass., company, the StorageWorks RAID Array 210 provides extended fault tolerance with redundant disks, power supplies, cooling fans and error detection and recovery software.

Features include automatic, unattended rebuilds, hot spare/hot swap disk drive configurations and modular and scalable disk drive configurations.

The StorageWorks RAID Array 210 starts at $6,999.

▶ *Digital*
(508) 841-3111

Oneac Corp. has announced DoubleBax, an integrated security backup system for Novell, Inc.'s NetWare 3.11, 3.12 and 4.01.

According to the Libertyville, Ill., firm, DoubleBax includes an uninterruptible power supply (UPS) and a functional tape backup and restore system.

The product integrates Oneac's On Series UPS with Exabyte Corp.'s mini-cartridge or 4mm digital audiotape system.

Prices start at $2,694 for the software, cabling, tape drive and UPS.

▶ *Oneac*
(708) 816-6000

FourGen Software, Inc. has announced FourGen Visual, a family of graphical decision-support tools.

According to the Seattle company, FourGen Visual tools let managers understand large amounts of data in their financial and order fulfillment applications.

FourGen Visual applications run under Windows and access information from FourGen's Enterprise applications and other sources. Users create dynamic reports using Windows-based spreadsheets and word processors.

FourGen Visual supports Dynamic Data Exchange, Object Linking and Embedding, Multiple Document Interface and Messaging Application Programming Interface, according to the company.

Prices start at $30,000, depending on the number of users and platform.

▶ *FourGen Software*
(206) 522-0055

Rupp Technology Corp. has announced FastLynx Lite for DOS, a DOS-oriented file transfer program.

According to the Phoenix firm, FastLynx Lite for DOS provides rapid file and data movement between connected PCs in either serial or parallel transfer modes.

Users can access printers and disk drives that are attached to another PC and can bypass the file server for direct peer-to-peer file transfers via a Novell, Inc. IPX network driver.

Other features include on-the-fly file compression, automatic upload and a diagnostic program.

FastLynx Lite for DOS costs $59.

▶ *Rupp Technology*
(602) 224-9922

S&S International has announced Dr. Solomon's Audit, a software auditing tool.

According to the Huntington Beach, Calif., company, Dr. Solomon's Audit lets users track every application on every PC without disrupting other users' workflow.

The Management Center oversees the creation and analysis of software audits and management of the software package library, while the Scanner is used to collect data from users' PCs.

Prices range from $695 to $1,095.

▶ *S&S International*
(714) 470-0048

InterSystems Corp. has announced DT-Max 6.0, PC-based platform technology.

According to the Cambridge, Mass., company, DT-Max 6.0 transforms the PC from limited client/server usage to function as an enterprise client/server platform.

Features include dynamic detection and recovery of failures on the system, automatic detection of required partners in the client/server architecture, dynamic name space mapping, massive data set support and a distributed cache protocol.

DT-Max 6.0 client licenses start at $195, and server licenses start at $1,900.

▶ *InterSystems*
(617) 621-0600

JRL Systems, Inc. has announced OutLAN 1.0, desktop plot management software.

According to the Austin, Texas, company, OutLAN 1.0 provides integration of printers, plotters and scanners in a network or workgroup.

The product performs plot queuing, spooling and output and provides a bi-directional link between the plotter and the user, with event notification for verification and accounting purposes. Users can each define their own default plotter setup file.

OutLAN 1.0 costs $1,495.

▶ *JRL Systems*
(512) 288-6750

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Client/server lacks correlation tools

User solutions combine various expert systems

By Steve Moore

Companies with large, distributed client/server networks say they do not have adequate tools for measuring end-to-end response time or correlating information about the components involved in a network transaction.

"Right now, it's taking longer and longer to isolate problems across networks," said Gil Irizarry, a network manager at American Cyanamid in Clifton, N.J. Without higher-powered end-to-end management tools, "we'll go broke buying hardware and software to debug everything," he said.

Instead of manually correlating data from multiple sources across the network, "the best thing for me would be to have an interpreter to bring data from different sources into a common database in a common format," Irizarry said. But with his current mix of IBM's NetView/6000, Cabletron System, Inc.'s Spectrum, SynOptics Communications, Inc.'s LattisView and Network General Corp.'s Sniffers, "the chances of our wish coming true are very remote," he said.

Another user echoed Irizarry's concerns. "Our No. 1 problem is finding out where a problem occurs in a short amount of time," said Peter Ho, a network manager at Unocal Corp. in Los Angeles. Ho explained that his company needs to have all its technical groups working together on the end-to-end fault isolation problem, from the mainframe to the file server and from the LANs to the WAN.

"The system we need is one that will put all this together, integrate and correlate it and give us a solution. It's a very strategic decision," Ho said.

Unocal developed its own applications and end-system agents for measuring end-to-end response time because "there's nothing out there that measures that," Ho said. "We still don't have the end-to-end data correlation that we need, and we need quite an expert on staff just to solve the response time problems."

"Correlation is at the top of the list," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington. "If you distribute intelligence properly, you should only have to correlate previously analyzed information." Dzubeck said the best approach is to analyze and filter information locally before forwarding it to a central location for correlation.

Dave Marshall

But vendors wrestling with these problems have yet to come up with the enterprisewide capabilities users crave.

"Time-correlating diverse events at a centralized place to support end-to-end decision-making — that's the problem we're trying to solve," said Scott Godlew, a software development engineer at Hewlett-Packard Co. Currently, HP's Network Advisor can correlate events on a single LAN segment but not across multiple segments, he said.

Tackling the problem

Two other vendors are attacking the problem from a database-specific angle. Network General and Oracle Corp. last week announced a technology agreement under which Sniffer products will be used to help optimize the performance of Oracle databases across networks.

Using protocol decodes and analyses, the two companies aim to enable users to determine what database performance problems can be attributed to. However, the new capabilities are not

Correlation, *page 61*

Telephony API gains momentum under Windows 95

By Stuart J. Johnston

■ When Microsoft Corp.'s next version of Windows, Windows 95, arrives next year, it will bring a universal messaging client that will, in theory at least, begin the merger of electronic mail, faxes and voice mail on users' desktops.

Hidden behind the messaging client and Windows 95's user interface is an application programming interface (API) created specifically to help merge telecommunications and telephony, called Telephony API (TAPI).

TAPI will provide a standard interface that enables applications to use the services of a wide range of telephone systems, private branch exchanges (PBX), Integrated Services Digital Network (ISDN) carriers, cellular phone networks and central office exchange systems, according to Charles Fitzgerald, product manager in Microsoft's digital office products group.

These applications include personal information managers, call control applications, integrated messaging products such as Microsoft's Exchange client and desktop teleconferencing tools. Call control is the ability to perform user/operator functions such as call hold, call transfer, Caller ID and call routing, which in many situations are handled by a dedicated phone system operator.

"I think there will be [user] benefits to it because [among other things] it will give you first-party [personal] call control," said Nancy Jamison, telecommunications analyst at market researcher Dataquest, Inc. in San Jose, Calif.

Of course, even after Windows 95 arrives some kinks will need to be worked out. For example, at Microsoft the changeover will require replacing proprietary digital telephones and installing ISDN cards in users' PCs.

Many users said they do not think TAPI will take off any time soon. "Maybe it will happen 20 years from now," said Greg Scott, information services manager at Oregon State University's College of Business in Corvallis, Ore.

One major problem, Scott said, is that "in our facilities, [telephony and telecommunications groups] are two separate departments using two different technologies. And while some people argue that wire is wire, it's not necessarily so."

Still, several observers said they see the near future as watershed years for TAPI. "I believe we'll see things really exploding in late 1995 and in 1996," said Jim Burton, president of C-T Link, Inc., a Boston-based consulting firm.

One reason for this optimism is that half of all phones in use at companies are not digital, and those analog phone users will be able to switch to a TAPI-compliant world quicker because they do not have to replace phones, Burton said.

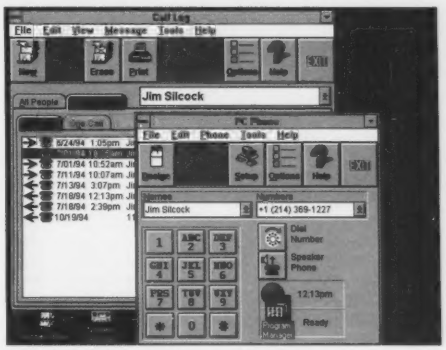
On their way

The first TAPI-compliant applications have already started shipping even though the operating system that enables TAPI use, Windows 95, is still at least six months away.

Vendor contributions

Some PBX vendors are also spurring change. Earlier this month, Northern Telecom, Inc. and Mitel Corp. announced they are shipping the first products that link their PBXs with TAPI-based applications. With Northern Telecom's Visit Fastcall, for instance, users of the company's Meridian 1 PBX will be able to automate telephone call handling from desktop PCs.

Rolm Co. also said it will ship in December a TAPI driver that works with one of its switch models, providing access to its call control and phone-mail features.



Windows 95 *will enable independent software vendors to build phone-handling applications that let users merge PC and telephone functions*

"If there's a way for us to leverage the technology back to Pac Bell central office" switches and integrate it "with the voice-mail product we sell, I can see nice synergies come off of that," said Jim Martin, information manager at Pacific Bell's sales agency group in Anaheim, Calif.

In the long term, Microsoft said it envisions a world in which most of the expensive value-added functions will migrate off the PBX onto less expensive PCs and servers — a model very similar to today's downsizing trend.

A likely side effect will be that as TAPI gains momentum, phone switches will make a comeback in user network topologies, said Frank Dzubeck, president of Com-

TAPI, *page 60*

Elisabeth Horwitt

Novell calls NT truce

"Novell is going to stick to its knitting." To the hearty applause of users and analysts, CEO Robert Frankenberg made this the theme of his first official strategy sessions last month. He promptly backed up his statement by withdrawing his company from active competition against Microsoft in the client operating systems arena.

However, Frankenberg's definition of Novell's knitting, while significantly more focused than that of his predecessor, Ray Noorda, still reaches far beyond the traditional network services platform niche. Frankenberg's new organization includes an application division, centered on WordPerfect, and an application server division, based on UnixWare. These commitments could seriously hamper rather than help Novell in its coming battle against Microsoft for dominance of the distributed computing market, several analysts agree.

Deadline is Priority 1

Analysts also agree that Noorda's dispersing of Novell resources into expensive acquisitions in the last few years has a lot to do with NetWare 4.1's tardiness. Frankenberg's top priority right now is to meet the early December deadline for delivering this first, full-function version of Novell's enterprise network server platform.

In particular, Novell needs to funnel its resources into establishing NetWare Directory Services (NDS) as the dominant global directory platform before Microsoft comes out with its competitive equivalent in Cairo, says Paul Callahan, a senior analyst at Forrester Research, a Cambridge, Mass., research firm. Key missing pieces that are due out next year include NDS support for important NetWare Loadable Modules, such as NetWare for SAA and leading SQL databases, and for UnixWare.

Once Novell establishes NetWare 4.1 and NDS firmly on its own platforms, however, the much-thornier question arises: Should the company extend NDS to non-Novell environments, particularly Microsoft's Windows NT and non-Novell flavors of Unix?

The temptation for Novell right now is to keep NDS as a competitive edge to sell UnixWare and NetWare — and eventually the hybrid distributed computing platform dubbed SuperNOS.

Corporations increasingly want a single directory structure for maintaining and administering user log-ons and security and providing single log-on access to computing resources across multiple servers. If buying NT servers means maintaining a whole separate directory structure, they may conceivably decide to stick with Novell servers.

Decision pending

A more likely scenario, however, is that customers will insist on NT, not UnixWare, as their primary application platform. In that case, Novell will shoot itself in the foot by refusing to provide NDS support for NT. Meanwhile, Microsoft will woo Novell's customers by making it easy for them to integrate NetWare with NT and Windows and to migrate from NetWare to NT.

Novell's best shot at countering the Microsoft menace is not to go head-to-head with NT, but to position its network services to integrate multivendor 32-bit server platforms across the enterprise, according to a recent News Analysis by the Burton Group, a Salt Lake City consultancy. This would leverage the areas where Novell clearly has a lead over Microsoft, and the company would not have to play catch-up with its rival. SuperNOS isn't due out until 1996, at the earliest.

Furthermore, the industry desperately needs a vendor with a strong installed base to provide a structure of underlying distributed computing services. The closest thing to this, the Open Software Foundation's Distributed Computing Environment, is taking forever to mature and has yet to gain support from the non-Unix client/server sector. Novell, if it opened up NDS to other vendors' platforms, would be filling a real need as well as possibly ensuring its own survival as a dominant industry force.

Frankenberg and his crew are now deciding whether or not to unbundle NDS from NetWare. Stay tuned.

Horwitt is a writer in Newton, Mass.

Hubs

Cost can tip sales in 'fast' Ethernet's favor

By Stephen P. Klett Jr.

What do you do if your Ethernet network is overloaded but you cannot fork out the cash to move to Asynchronous Transfer Mode (ATM) or Fiber Distributed Data Interface (FDDI)? Well, you may want to bring in "fast" Ethernet.

That is exactly what NorthStar Financial, a commodity trading firm in Chicago, is doing. NorthStar is a beta site for Grand Junction, Inc.'s 16-port, $3,995 FastHub 100 "fast" Ethernet hub, which was announced recently.

According to Grand Junction in Fremont, Calif., the FastHub 100 is the first standalone 100M bit/sec. hub on the market. It was designed to provide high-speed connections between centralized servers and workgroups of power users.

10 times the fun

100Base-T carries the same benefits as Ethernet — 10Base-T — only faster, according to proponents

- Based on CSMA/CD, Ethernet's media-access control protocol
- 100M bit/sec. data rate
- Requires 100Base-T hubs and adapter cards
- Uses standard 10Base-T wiring schemes: Unshielded twisted-pair Categories 3, 4, 5
- Currently a draft standard in IEEE 802.3 Final approval expected by year's end

Cheaper, faster

NorthStar's network consists of roughly 80 Sun Microsystems, Inc. workstations and 100 PCs running broadcast-intensive, client/server applications, according to Roger Salisbury, network administrator. For example, a Sun server on its FDDI backbone broadcasts data to all of the Sun workstations at a rate of 11M to 12M bit/sec., which is more than the theoretical 10M bit/sec. load Ethernet can handle under perfect conditions.

"This is obviously hosing our Ethernet quite badly, and we were looking for a lower-cost-per-port alternative to FDDI or ATM to reduce the congestion," he said.

With the FastHub and adapter cards from Sun, NorthStar gets an acceptable answer for a little under $1,000 per port, whereas FDDI would have run $2,000 to $3,000, Salisbury estimated.

"We really wanted ATM, but that's way out of reach," Salisbury said. He added that it would take about three years for ATM to become practical from a cost perspective.

NorthStar has been using the FastHub 100 for about a month in production to support nine Sun workstations connected to a tenth Sun server. According to Salisbury, the hub has reduced NorthStar's level of network utilization from more than 90% to about 15%. NorthStar plans to move the rest of the Sun users to 100M bit/sec. Ethernet as well, Salisbury said.

Two FastHub 100 hubs can be arranged in a daisy chain to connect up to 30 users. It can also be used to connect up to 30 of Grand Junctions' FastSwitch 10/100 workgroup switches to create networks capable of supporting up to 750 end stations and 30 servers, Grand Junction said. The FastHub 100 is available now.

However, analysts said 100M bit/sec. Ethernet's perception as being an interim solution may be holding some users back.

"Since some people see 'fast' Ethernet as an interim solution, they are going to just stay with what they have until prices come down. Why do something to disrupt users and cost money if you'll just be replacing it in two years?" said Kathryn Korostoff, president of Sage Research in Natick, Mass.

Korostoff said for backbone applications it may make more sense to wait for ATM. However, she said if users primarily just want to improve server access, 100M bit/sec. Ethernet is a good choice that would likely not have to be replaced for several more years.

Wait and see

Although ATM has a ways to go before it hits the mainstream, its presence in the market is overshadowing "fast" Ethernet, according to Dataquest, Inc. In a survey of 300 companies, the market research firm found three out of five respondents planned to wait for ATM, rather than go with 100M bit/sec. Ethernet.

TAPI

CONTINUED FROM PAGE 59

munications Network Architects, Inc., a consulting firm in Washington. "We're going back to switches" as a network architecture because future communications will need them to provide point-to-point connections between people, he said. Today's LANs are broadcast systems. In other words, networking topologies will look more like the phone network than a LAN, he added.

"One real tremendous value of TAPI is that it sits very well on the desktop," Dzubeck said. This gives users more control over communications functions and puts those functions on a PC-based desktop or server under a well-defined standard. This ultimately cuts costs for advanced services, Dzubeck said.

Burton agreed and said making such functions easy to use will also help. "The graphical interface of the PC makes [advanced communications services] a lot easier to use than buttons on a phone," he said.

Explore OnNet promises smoother 'net surfing

By Gary H. Anthes

■ FTP Software, Inc. recently added to the rapidly growing body of software intended to take the pain out of using the Internet.

The North Andover, Mass.-based company announced Explore OnNet, an Internet kit aimed squarely at commercial users. The Windows-based kit, which sells for $149, facilitates use of basic Internet services such as electronic mail, Telnet, file transfer protocol (FTP), Gopher and news group access.

It also includes an enhanced version of the Mosaic Internet navigator that the company claims is faster, more robust, more powerful and uses less memory than the freeware version of Mosaic invented by the University of Illinois' National Center for Supercomputer Applications.

Systech Corp., a San Diego-based maker of communications hardware and software, has been using Explore OnNet for a month to allow its employees to tap into the Internet from home. Users dial in to a communications server, are passed to a router and then to the Internet, said beta-tester Evan Knuttila, a program manager at Systech.

"They are using the Internet for research," Knuttila said. "They can run Mosaic, FTP, Gopher or any TCP/IP application right on their home PCs."

Knuttila said he especially likes the product's Connection Wizard, which facilitates the complex and error-prone process of establishing the first connection to an Internet access provider. The feature prompts for information about the user's PC, extracts information from the service provider, builds the resulting logon scripts and remembers them for subsequent use.

FTP Software said the Connection Wizard allows users to be up and surfing the Internet in less than five minutes.

But some say that may be a tad optimistic. "Five minutes? I can't get it out of the shrink wrap in that time," said Tim Sloane, director of messaging applications and services at Aberdeen Group in Boston. "None of these things are easy to use."

Better than others

Nevertheless, Sloane said he would recommend products such as Explore OnNet, particularly for Internet novices, because they are significantly easier to use than the freeware available on the Internet.

"The access providers start out asking, 'Are you knowledgeable?' If you are, they say, 'OK, download the shareware, have a good time, and try not to call us,' " Sloane said.

"If you say, 'No, I'm not knowledgeable,' what they should say is, 'It would be worth your while to spend a little money and buy one of these products,' " Sloane added.

He said FTP Software will have an advantage in the corporate world where its version of TCP/IP is widely used and has much more of an installed base than most of its competitors.

"Explore OnNet — and all of these products, really — are very much works in progress," said Rick Villars, director of network architectures research at International Data Corp. in Framingham, Mass. "Compared to what's been there in the past, they are tremendous helps."

However, Villars said they have a ways to go. "When users want weather, they don't want to go to [file transfer protocol] and then log in to a server and get a directory and then go somewhere else. They want to just click on weather and the weather map pops up," he said.

Internet access kits

VENDOR/ PRODUCT	ACCESS PROVIDER	ACCESS CHARGES	PRODUCT PRICE
FTP Software N. Andover, Mass. **Explore OnNet**	Any	NA	$149
Netcom San Jose, Calif. **NetCruiser**	Netcom On-Line Communication	$19.95/ month	Free
Spry Seattle **Internet in a Box**	Any, but set up for Sprint/Link	$8.95/ month, plus $8.95/hour	$149
InterCon Herndon, Va. **TCP/Connect II**	Any	NA	$495
NetManage Cupertino, Calif. **Internet Chameleon**	Any	NA	$199

NA – Not applicable

Correlation

CONTINUED FROM PAGE 59

slated to become available until the middle of next year.

Ultimately, vendors said, fulfilling users' correlation wishes will require a sophisticated combination of three different expert systems. They include the following:

- **The rules-based approach.** Knowledge of the current status of a network allows the system to follow a set of rules for inferring whether an action is required, and if so, which action that should be.
- **The case-based approach.** Previous problems and solutions compiled into a database are reviewed by the system as it seeks an appropriate response to a new problem.
- **The model-based approach.** The system, following a model of the way it ought to behave, constantly monitors its behavior and adjusts itself accordingly.

User input important

No matter which approach an expert system is based on, it requires some initial and ongoing user input about the network environment it will manage. Unfortunately, "most people don't know what their networks look like," Godlew said.

Yet another problem is that most vendors want their management tools to lord over competing tools and are unwilling to allow their products to share management information that would give users end-to-end network visibility.

GE places services on the Internet

By Ellis Booker

One of the country's biggest noncomputer manufacturing firms has joined the Internet.

With much fanfare, General Electric Co. announced that its GE Plastics unit now has its own "Home Page" on a World-Wide Web server available to its global customer base. Separately, GE announced that its GE Capital Services, Inc. in Stamford, Conn., will also be on Home Page, along with its 24 business units.

"We already actively use EDI with our customer base ... but we felt a need to do more," said Rick Pockock, general manager of marketing communications at GE. However, he said, the company would not replace its current electronic data interchange (EDI) arrangements with the Internet. "We're not at the moment planning any transactional features," he said.

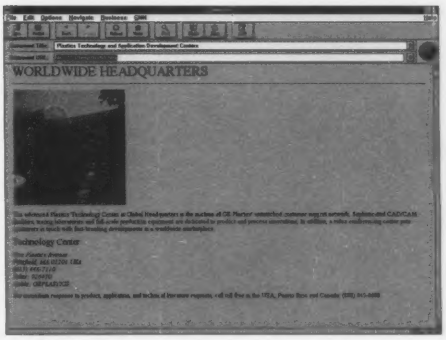
Help yourself

Home Page, which will contain more than 1,500 pages of text and photos — between 35M and 50M bytes' worth of data — was developed by One World Interactive in Spencertown, N.Y.

GE executives said one of the main benefits of Home Page will be to off-load help desk calls to the company's 800-number, which now receives 80,000 calls yearly.

GE Plastics is also using a customized version of Internet in a Box, a Mosaic browser from Spry, Inc. in Seattle. Among other features, the customized version of the Spry browser makes GE Plastics the default destination of users logging on to the Internet.

The next phase of the project, according to GE officials, will be to permit access to interactive resources such as the company's computerized decision tree that its help desk uses.



GE Plastics *uses Spry's Internet in a Box, a customized Mosaic browser that makes GE Plastics the default destination and eases help desk access*

Weaving a Web

Sometimes companies offer a Web server to external customers before realizing the utility would help their own employees.

That was the case at Sun Microsystems, Inc. in Mountain View, Calif.

Sun's External Home Page (http:\\www.sun.com\) went into operation in April and is now believed to be one of the most popular Web destinations. In June, for instance, the server received approximately 50,000 hits daily, according to Sun sources.

The internal Web server, dubbed SunWeb, has been up since July but has yet to be officially announced within Sun, according to Lew Jamison, manager of engineering marketing and training and head of Sun's Library and Information Center.

External Home Page currently has some 15 "buttons," hyperlinking employees to everything from organizational maps to daily electronic news feeds.

Jamison said he expects Sun-Web will be made generally available to Sun employees in November or December.

—Ellis Booker

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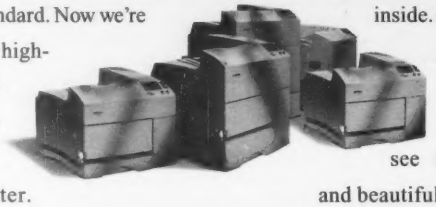

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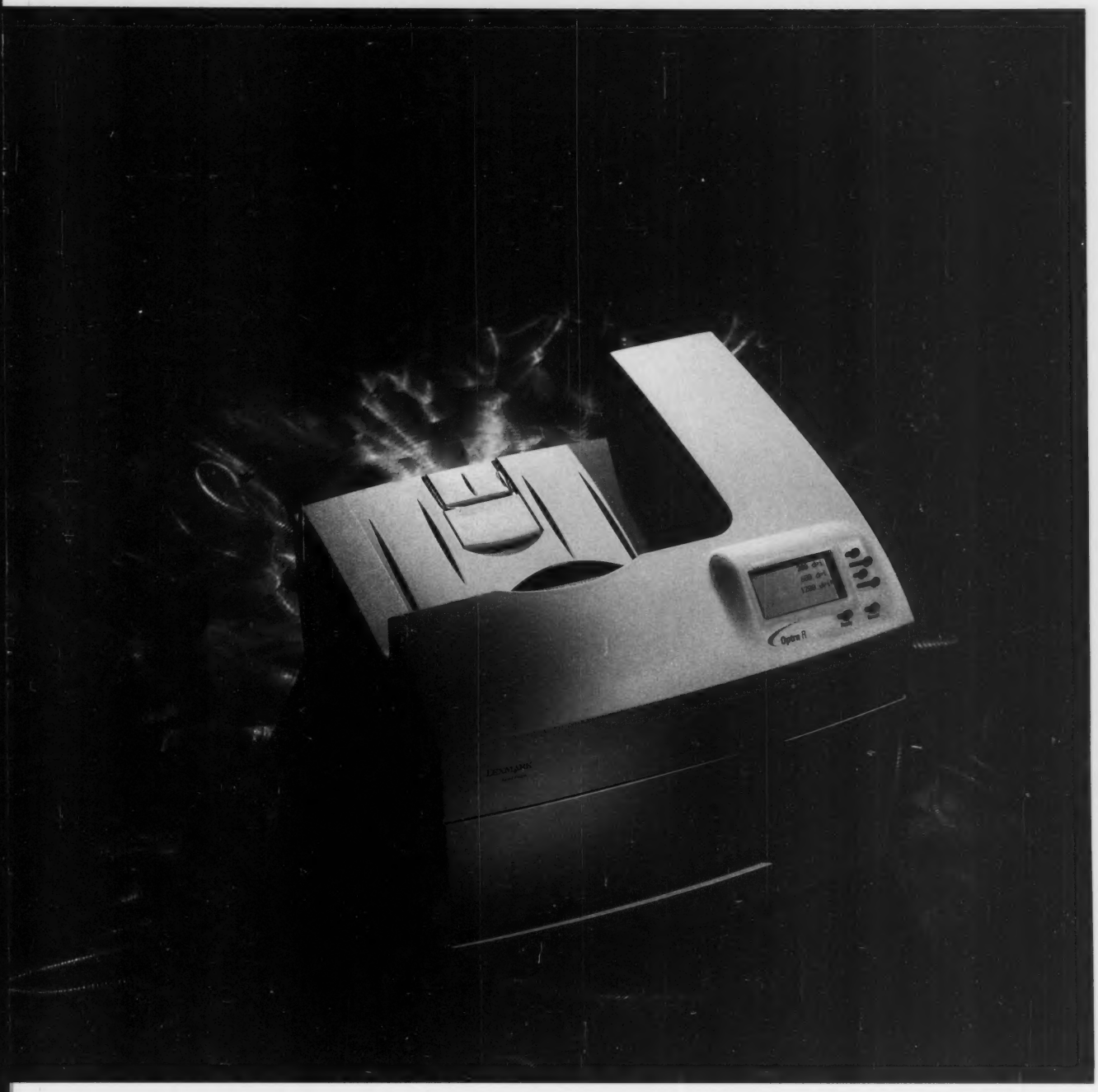

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IBM calls on System/36 to pave way for AS/400

RISC, package pricing tested on old platform

By Craig Stedman

The venerable System/36 has gone from pariah to proving ground at IBM.

The computer giant has ignored the System/36 for the past six years while it has tried to get users to move lock, stock and barrel to the AS/400. But now it has brought the older midrange platform back to life to test RISC technology and packaged pricing that will be infused into the AS/400 next year.

IBM recently followed through on its pledge to field new hardware that runs the System/36's SSP operating system. As promised, the AS/400 Advanced 36 is built around a prototype version of the 64-bit PowerPC microprocessor scheduled to be introduced for the AS/400 in mid-1995 [CW, July 25].

The Advanced 36 is also the first system to implement new object-oriented microcode, which will be planned as another key feature of the full PowerPC-based AS/400 line. On the pricing side, it is being sold in packaged configurations that IBM plans to use as models for creating the low-end AS/400 bundles due to appear early next year, according to William Zeitler, assistant general manager of marketing at IBM's AS/400 division.

Fertile ground

The user base of System/36 holdouts is enticing: An estimated 200,000 or more machines are still in use worldwide. Some users were particularly intrigued by IBM's plan to adopt packaged hardware and software pricing on some AS/400 systems. This would mimic the three predefined configurations created for the Advanced 36.

"Packaging in that way would make things easier for us when we go to replace our systems," said Bob Gauthier, a consulting services engineer for technology planning at Lucky Stores, Inc., a grocery store chain based in Dublin, Calif.

Lucky Stores has about 1,000 low-end AS/400s in its stores to collect employee time and attendance records, and the

IBM, *page 69*

Back to the future

IBM SAID THE AS/400 ADVANCED 36 WILL RUN TRANSACTIONS AT FOUR TIMES THE SPEED OF THE OLD SYSTEM/36 HARDWARE

Processor	Custom 64-bit PowerPC chip
Memory capacity	32M to 96M bytes
Disk storage	1G to 4G bytes
Tape storage	2.5G bytes
Number of users	40 to 80
Starting price	$12,000

Adjusting the caps

IBM is still trying to nail down some promised changes to the user-based pricing structure it set up for the AS/400's operating system last spring. The alterations are intended to ease price increases that would have hit certain customers, especially at the low end.

William Zeitler, assistant general manager of marketing at IBM's AS/400 division, confirmed previous reports [CW, June 27] that the company is tinkering with price caps "to provide more consistency."

For example, a customer with 75 users on an AS/400 Model F35 would pay $33,600 for OS/400 Version 3 under the user-based scheme; the previous capacity price was $19,400. "Customers got a chance to vote on this, and they decided that they weren't going to buy at those prices," Zeitler said.

It remains "slightly premature" to disclose the new pricing, which is still being put through administrative procedures in IBM's sales organization, Zeitler said. However, IBM has been offering special prices on a promotional basis to ensure "that no customers are getting hurt by this," he added.

David Andrews, managing partner at D. H. Andrews Group, Inc., a consulting firm in Cheshire, Conn., said it was not surprising that IBM failed to make user-based pricing perfect the first time around. "When you make a change this fundamental, you're going to need to do some fine-tuning," he said. — *Craig Stedman*

Concerns leave Digital's future up in the air for Dexcon attendees

By Mary Brandel

Should I stay or should I go? That was the question for many of the 80 or so Digital Equipment Corp. customers who attended the recent Dexcon show in San Francisco. The issue, most said, is not whether to ditch the VAX but whether Digital will remain a point player in the move to client/server systems.

"DEC has got the inside track, but we're looking at others," said Richard Goulde, MIS manager at Commercial Metals Co. in Dallas. Goulde said OpenVMS on Alpha may be a short-term solution, but in a year or two, the company will likely move to Unix.

For Goulde and his peers, Unix opens the door to non-Digital considerations.

"Digital will continue to play a role in our company, but it may be a different role," said Robert Guthrie, manager of technical services at Hoffman-LaRoche, Inc., one of Digital's largest accounts in New Jersey. "My customers are challenging me not to be DEC-centric."

Digital held only one presentation at the show, which attendees said addressed few of their true concerns.

"I didn't think DEC heard, much less answered, questions that we were concerned with," Goulde said. Those concerns — vented during an open question-and-answer session — included uncertainty about Digital's software future, a lack of communication with customers and a perceived decline in support quality as Digital moves to indirect channels.

Long lead times and the inability to answer questions were among the frustrations users had regarding value-added resellers (VAR).

In response, Pauline Nist, vice president of systems and hardware, said Digital is working to better certify and train channel partners. She promised to address the concerns upon her return to Maynard, Mass. However, she cautioned, cost-cutting and refocusing was Digital's overriding concern.

Nist also outlined Digital's hardware strategy, throwing in some sneak previews of upcoming servers and workstations.

But while users said they appreciated the advance notice, hardware was not the burning question.

"I'm not thrilled when I hear about a chip that runs at 300 MHz," said an attendee from the banking industry who wished to remain anonymous. "I need a platform to run transaction processing applications."

For two years, he said, the bank has held off from investing heavily in VAXs because of Digital's emphasis on Alpha. However, such a migration was impossible because the ACMS transaction monitor will not be ported to Alpha until the end of this month. "We're questioning our DEC strategy more and more," he said.

Attendees also questioned Digital's software strategy, especially in light of the sale of its relational database to Oracle Corp.

"They lost the wheels of the bus with Rdb," said John Stevenson, vice president of MIS at Dr Pepper/ The Seven-Up Co. in Dallas.

Dr Pepper/The Seven-Up Co.'s John Stevenson: *'VMS will fade away.... I'm not sure if DEC will be strategic in our shop in five years'*

Newport News Shipbuilding's Frank Brake: *'Don't take somebody else's word for it. Otherwise, you'll join the stampede of lemmings over the cliff'*

Still not satisfied

Nist outlined the new Digital software business unit, but concerns remained.

For instance, Guthrie said he has purchased what he considers to be "obsolete" VAXs for a year because Alpha Pathworks does not yet incorporate Macintosh clients. Digital said Macintosh support would not be available until spring.

Even customers who are happy today may not use Digital tomorrow. At Dr Pepper/ Seven-Up, Digital's Alpha-based DEC 7000 clusters running OpenVMS are the

Digital, *page 69*

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Integrated Networking Interface	32-bit	16-bit		
Integrated, multiprotocol Boot-ROM	X	X		
ISA Plug-n-Play Compliant	X	X	X	
Multilevel Security Features	X	X	X	X
Asset tracking	X	X	X	
PC tattooing	X	X	X	
Optional Desktop Management Software	X	X		
Bi-directional parallel port	X	X	X	X
Desktop Management Interface (DMI)[3]	X	X		

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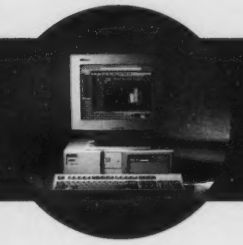

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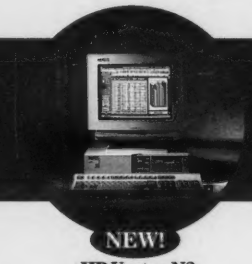

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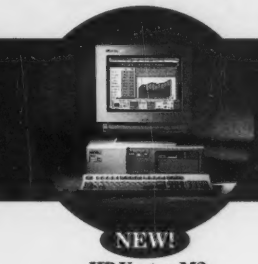
- *210-MB, 14-ms Fast-IDE hard drive[1]*
- *32-bit Fast-IDE local-bus hard disk interface*
- *8-MB RAM, expandable to 96-MB*



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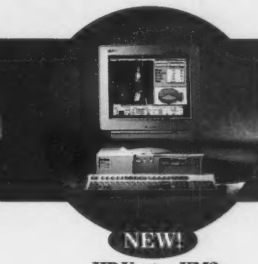

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- *PCI integrated 64-bit S3 Vision-864 graphics with 1280 x 1024 resolution or PCI MGA Ultima Plus graphics with up to 1600 x 1200 resolution*
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- *Integrated Desktop Management Interface (DMI)[3]*
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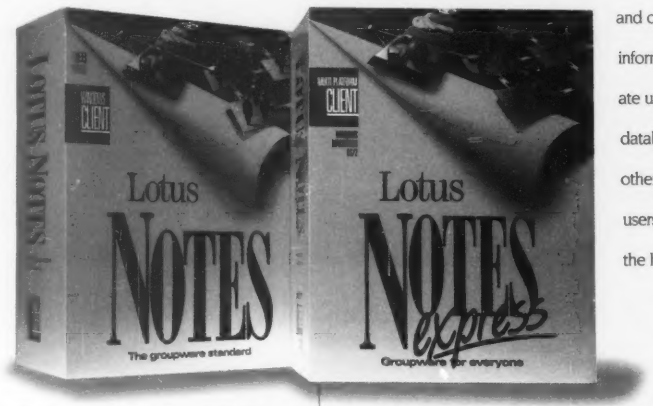

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Third parties aid move to client/server for HP 3000

By Mark Halper

Two third-party vendors have begun offering Windows front ends for character-based applications running on Hewlett-Packard Co.'s HP 3000 minicomputer.

The front ends include NUView, marketed by New York-based systems integrator Advanced Systems, Inc., and NewFace, marketed by Toronto software house M. B. Foster Associates Ltd. Users can switch from the character-based method used in applications written with HP's VPlus screen handler. VPlus is used in nearly all HP 3000 sites, HP technical consultant Mike Yawn said.

HP 3000 users welcomed the idea of a Windows look and feel.

Ideal timing

For the San Francisco Symphony, the emergence of the products comes at the perfect time, just as David Murdoch, director of information systems, begins evaluating ways to modernize his HP 3000 operations. That process may eventually entail replacing an older HP TurboImage database with a newfangled ImageSQL, but Murdoch is approaching it one step at a time.

"I'm concerned with the front end of the screen right now so that the functionality of the system is like a Windows environment," said Murdoch, who is evaluating NUView and NewFace. The symphony runs on an HP 3000 Model 948 tied to about 100 PCs.

Dana Brown, chief information officer at Foundation Health Corp. in Rancho Cordova, Calif., said the idea of running a Windows front end in an HP 3000 milieu is "pretty intriguing."

Brown said such a tool might have prevented the insurance company from replacing many of its terminals with PCs in the past year or two. But one of the company's affiliates, Foundation Health Preferred, has a large inventory of terminals and could benefit from NUView or NewFace, he said.

"I'm looking forward to having a Windows front end," said HP 3000 user Don Harrington, a systems analyst at The Boeing Co. Harrington uses Seattle-based Walker Richer and Quinn, Inc.'s Reflections terminal emulation software to help some 200 PCs access a central HP 3000. "Something like NewFace would make the interface easier to use," he said.

Both products hit U.S. shores in the past two months after about a year of availability in Europe. NUView was developed by London-based Chronological Ltd. and NewFace by HP and Willebroek, Belgium-based Denkart NV.

NUView puts a Windows front end on any HP 3000 program written in HP's V Plus screen handler. Ironically, it requires Reflections, which converts a PC into a virtual HP 3000 terminal. NUView does not convert an HP 3000 environment into a bona fide client/server environment, as all processing continues to reside on the HP 3000.

NewFace is the more complex and expensive product. In addition to providing Windows front ends in an HP 3000 environment, it also permits distributed processing.

NUView licensing fees

Number of users	Price
1	$895
8	$1,500
20	$3,000
32	$4,200
64	$6,750
100	$8,500
250	$13,750

CA integrates EDI software

Premenos deal punches up manufacturing packages

By Thomas Hoffman

Computer Associates International, Inc.'s recently announced plan to integrate its manufacturing packages with electronic data interchange (EDI) software from Premenos Corp. is being well-received by CA customers.

Users said they are anxious to use EDI to streamline their inventory management systems with retail customers such as Kmart Corp. and The Home Depot Co. Although major retailers have used EDI for years, most manufacturers have only recently begun to tap EDI in their efforts to reduce cycle times and manage inventories more effectively.

"EDI integration is a clear requirement for any type of quick response or inventory replenishment. With EDI, manufacturers will be able to more closely gauge sales levels of their products on retailers' shelves rather than trying to forecast the movement of those inventories, which has been a real Achilles' heel for manufacturers," said Tony Baer, chief analyst for supply chain management at Advanced Manufacturing Research, Inc., a Boston consultancy.

Next up . . .

Next month, CA will release a new version of its IBM AS/400-based CA-PRMS manufacturing package, which will include enhanced functionality and distribution capabilities.

Under its marketing and development agreement with the Concord, Calif.-based communications software provider, CA will completely integrate its CA-PRMS, CA-Manman and other manufacturing packages with Premenos' EDI/400 and EDI/E modules. CA intends to roll out the EDI interfaces to its AS/400-based CA-PRMS customers by year's end, followed by Unix-based CA-Manman packages early next year, according to David Cahn, CA's director of strategic planning.

That is good news for CA-PRMS users, who seem eager to apply the communications interfaces with their shop-floor systems. "EDI integration will allow us to exploit areas like banking services and production planning with customers like Motorola, Sears and JC Penney," said Judy Jarosh, director of information systems at Seiko Instruments USA, Inc., a Torrance, Calif., electronics maker that runs CA-PRMS on its IBM AS/400 Model F45 minicomputer.

Van Camp's Jack Boyles: *EDI promises improved efficiency*

Jack Boyles, director of MIS at Van Camp Seafood Co. in San Diego, another CA-PRMS shop, said he believes the CA/Premenos offerings could help his company improve the efficiency of its manufacturing resource planning and shop-floor operations. "The integration of EDI with our manufacturing software would be very appealing. I don't think most manufacturers have realized the efficiencies that can be gained through these efforts," Boyles added.

Jarosh said she believes CA's alliance with Premenos is a reactive gesture because competitors such as Software AG of North America, Inc. have made similar moves. Cahn denied that suggestion.

"We're not reacting to the competition; we're reacting to our client's business needs," said Cahn, who noted that users of CA-Manman and CA-Manman/X, which CA acquired in June from The ASK Group, Inc., placed EDI integration at the top of their wish lists.

Baer noted that while CA is not the first manufacturing software provider to address EDI integration, the market has just started blossoming, placing CA among the industry's leaders.

Digital's future

CONTINUED FROM PAGE 65

"platform of choice" to crunch 250G bytes of sales data in real time, Stevenson said. "Digital provides a unique capability at a value that's well within my cost parameters," he said.

But over time, "VMS will fade away, and Unix will be the flavor of choice," he said. In that scenario, "I'm not sure if DEC will be strategic in our shop in five years."

One attendee — who plans to continue using Digital for manufacturing applications — warned his peers to watch "with a practiced eye. Don't take somebody else's word for it," said Frank Brake, managing director of international operations for technology business development at Newport News Shipbuilding in Virginia. "Otherwise, you'll join the stampede of lemmings over the cliff and shrink your number of choices in the marketplace."

IBM Advanced 36

CONTINUED FROM PAGE 65

company will eventually replace the machines in one fell swoop, Gauthier said. However, the firm will likely consider non-AS/400 platforms when the time comes, he added.

The Advanced 36 packages appear to be "pretty well tied down to what exists in the real world," said Mike DeRosier, president of Empire Clock, Inc., a distributor of clocks and clock parts in St. Paul, Minn., and a test site for the new PowerPC-based hardware. "It's an OK way to buy the system, especially since the price points are pretty good," DeRosier added.

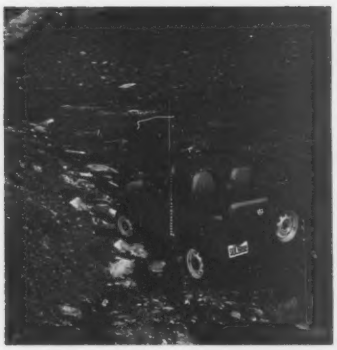
The entry-level package costs $12,000 and includes the base Advanced 36 hardware, the SSP operating system, IBM's PC Support software and its RPG compiler and development tools. The other packages have expanded hardware configurations and are priced at $15,000 and $30,000.

IBM aims to offer packaged configurations of low-end AS/400 systems such as the Advanced Model 200 before next year's big PowerPC rollout, Zeitler said. The AS/400 is more complicated to tackle with bundles because much more software is available for it than for the System/36, he added.

Myron Kerstedder, an analyst at Gartner Group, Inc. in Stamford, Conn., said the packaged approach is a cheaper way for IBM to sell smaller AS/400s. "Vendors just can't afford not to prepackage today," he said. "The trick is to get configurations that are useful to people."

IBM touts the Advanced 36's ability to run transactions at up to four times the speed of the System/36. But DeRosier and Keith Gertzman, president of RAG Electronics, Inc. in Newbury Park, Calif., said the Advanced 36 provides more than five times the performance. Each ran into some early bugs but said for the most part, those have been addressed.

Moving to the Advanced 36 was a snap, according to DeRosier. "I didn't have to convert or recompile anything," he said. "It was just a lateral move that made me go a whole lot faster." He said switching to the AS/400 "never made sense to me" because of the amount of conversion work it would require.



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Developing CDPD applications tricky

But software developers say wireless support for TCP/IP helps

By Michael Fitzgerald
SANTA CLARA, CALIF.

Developing applications for the wireless world is not as tricky as it might look, but that does not mean it is a treat either.

That was the consensus at the CDPD Forum, Inc.'s recent Software Developers Conference here. The Cellular Digital Packet Data (CDPD) community stressed that a network is a network, and the wireless component is simply an extension of the wired network, especially because it has hooks for standard TCP/IP applications.

Stiff competition

Analysts said support for standard TCP/IP puts CDPD in a much more favorable light than the networks it will compete with: ARDIS' Advanced Radio Data Information Services network and RAM Mobile Data's Mobitex network. These use proprietary development protocols, they said.

"The protocols used over ARDIS and RAM are so arcane that the development cycles that customers have encountered have been a real problem," said Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill. "Customers sit in the pilot stage for a long, long time while they try to work things out."

On paper then, CDPD should be a much easier wireless application environment to develop for. But analysts said applications that run easily over the high-bandwidth 4M to 10M bit/sec. Ethernet connections may need some retooling before they can run effectively over the 19.2K bit/sec. top transfer speed of wireless communications.

The nut of the problem is that applications are designed to run over wired networks with response times in milliseconds, while wireless packet data networks, including CDPD, require several seconds, Brodsky said.

CDPD vendor officials acknowledged the issues, however, and said most applications will need only "tweaking" to run over the still-incomplete CDPD network.

"CDPD is fairly easy to develop for" because it is an IP-based network, said Allison Koenig, independent software vendor development manager at AT&T Corp.'s McCaw Cellular Communications, Inc. unit. Koenig said the main challenge developers face is optimizing TCP/IP applications for wireless networks as well as cost considerations in terms of the data that can be transferred.

Not that easy

"If it was that simple, we'd have a market already," said Roberta Wiggins, an analyst at The Yankee Group in Boston. Wiggins said developing for wireless environments involves "more than just having IP connectivity. Wired and wireless are very different environments that people aren't really fully acknowledging."

Existing TCP/IP applications will run over CDPD, but middleware providers said users are better off if they start their application development cycle from scratch, without applications that run over TCP/IP. This is because of the wired vs. wireless development issues, the vendors added.

One middleware player estimated that only 20% of TCP/IP applications can be easily transitioned from a

CDPD, *page 74*

Wireless development challenges

- **Signal strength** — Cellular signals are not consistent and may be weaker than landline connections.
- **Typical delays** —
  - 1 to 4 second typical response time, longer with poor connections.
  - Cell handoff introduces 100 msec delay.
  - Mobile Data Intermediate Switch handoff introduces 500 msec delay.
- **Occasionally connections can be dropped**
- **Shared channel**

Source: AirLink Communications, Inc., San Jose, Calif.

CDPD guidelines

Jim Baichtal, president of AirLink Communications, Inc., said the five major factors that should make up the best CDPD applications are the following:

- Base client/server applications on TCP/IP.
- Do not generate unnecessary traffic.
- Focus on transaction-based applications.
- Keep messages short.
- Emphasize timely information access.

Object frameworks to play corporate role

By Ed Scannell

Object-oriented frameworks promise to radically change the way corporate developers create customized software in the next year or two.

One of the major advantages frameworks have over procedural programming techniques, such as those used in Windows, is the ready-made and detailed infrastructure they offer for creating applications and components. They provide developers with the basic functionality of an application, such as file and edit menus or the ability to window or print.

Object-oriented

"Frameworks are the key to using objects rationally," said John Donovan, senior analyst at WorkGroup Technologies, Inc., a Hampton, N.H.-based consulting firm. "They provide a context and a structure for collections of objects that are tailored to a specific application or business process."

Object-oriented frameworks are already embodied in operating systems such as those from Taligent, Inc. and Next Computer, Inc., and users said they are looking forward to working more with them.

Time-saver

"We are very interested in framework technologies like those in Taligent. We think it can dramatically reduce the amount of time it now takes to create mission-critical applications of the sort we do," said Jeff Headley, a systems architect at First Union National Bank in Charlotte, N.C.

"Because you can pretty easily extend or build on an existing object's capability and use it as part of another [development] project, the cost savings appear to be pretty significant," said C. K. Wong, senior technical analyst at the Bank of Montreal.

Many third-party developers agreed that frameworks are needed.

"It's getting harder and harder for us to keep up with the amount of resources needed to develop applications today. Up to 80% of application resources go into capabilities that are ancillary to what really makes our product stand out," said Randell Flint, president of Sun Dial Systems, Inc. in Seal Beach, Calif.

Corporate developers need to start thinking of object-oriented frameworks as class libraries they can selectively customize to meet very specific application needs, observers said.

"For instance, if you don't like 20% of the content of a given framework, you can sort of hack in your own functions to extend that framework's capability," said Mike Potel, vice president of technology development at Taligent.

Framework benefits

Another built-in advantage to frameworks is that changes made to one framework will automatically be reflected in other frameworks it interacts with. This capability is enabled by what Potel describes as a framework's "wired-in connections." In other words, users can also inherit the integration capabilities that exist among objects, he said.

Inheritance — when one object automatically assumes the capabilities of another — is one of the major technical differences between frameworks and the more traditional computer-aided software engineering (CASE) tools.

Frameworks, *page 72*

Many flavors

There are several types of application frameworks, ranging from those that help create user interfaces to lower-level frameworks that provide users with basic services such as communications and printing.

Software AG upgrades Natural

Company said release will include event-driven tools, object functions

By Rosemary Cafasso

Software AG of North America, Inc. plans to deliver more current application development technologies with its Natural product set so its customers do not have to step outside to get the latest tools.

The company will provide event-driven programming tools along with object technology for Natural in the next several months. This could be a big boost for Natural, a fourth-generation language and development platform that has been based on the procedural programming model since its debut in 1979.

"Natural is our standard, so we are delighted they are moving in that direction," said Gordon Deems, chief information officer at the Idaho Department of Health and Welfare. "This gives us an opportunity to standardize across all our various development methodologies on a single language."

Currently, a Natural customer can do event-driven programming by working with a tool set, such as PowerBuilder from Powersoft Corp. or Microsoft Corp.'s Visual Basic, and tying it into Natural.

A Software AG spokesman said this approach required a programming interface, and "it was up to the programmers to do that work." Event-driven programming means that an action taken on a screen, such as clicking on an icon, can trigger a series of steps.

The event-driven programming facility, called Natural New Dimension, is scheduled for general availability next month. The object tools will begin shipping in mid-1995.

"The customers have been waiting for this," said Jim Sinur, a research director at Gartner Group, Inc. in Stamford, Conn. "Traditionally, Software AG takes longer, but they usually bring out a good product."

Missing parts

Earlier this year, Software AG released a Windows-based front end to Natural, but it did not provide full graphical user interface, event-driven programming capabilities. Behind the covers, programs were executed in a procedural or linear fashion. The New Dimension facility gives users the ability to construct programs that are truly event-driven.

Michele Halkerston, a systems manager at Leaseway Technology Corp. in Cleveland, began beta-testing Natural New Dimension earlier this month. She said her team selected it because it will help them deliver more end-user requirements — including drag-and-drop features and icon-driven functions — for a new client/server system under development.

"When we first started the client/server project, we brought in users for brainstorming," Halkerston said. "Some of their top look-and-feel items appear to now be possible with Natural New Dimension. That's the main reason."

More to come

Longer term, Software AG will build object tools and techniques, such as inheritance, into the Natural platform. Users said it is another step the company needs to take.

Software AG plans to start this effort with the release of an object methodology early next year. An object-oriented version of Natural as well as Natural Workbench for object-oriented development are scheduled to be released before the end of 1995.

"I think it's a promising long-term direction," said Wayne Kernochan, an analyst at Aberdeen Group in Boston.

Frameworks to play role

CONTINUED FROM PAGE 71

Frameworks let developers manipulate individual objects that address specific needs. CASE tools use modeling and analysis to allow developers to pull together blocks of code that address several different application functions.

> **"Frameworks are the key to using objects rationally."**
> — John Donovan, WorkGroup Technologies

"With frameworks you have a hierarchy of objects, where child objects can derive the attributes of parent objects. CASE tools have no notion of a parent/child hierarchy," said Kishore Kamadh, a technical consultant at Atre Associates, Inc. in Rye, N.Y.

Expansion efforts

Longer term, frameworks will allow developers to extend the system into areas they did not originally foresee. This will, for example, be useful for supporting new and diverse devices such as networking, storage, audio, video, sound and even animation.

Object ORIENTED

Traditionally, developers who wanted to support these kinds of devices had to write entirely new device drivers for each device. But with frameworks, developers need only supply the characteristics and behavior specific to each new device.

"If there is a specific application need, users can go right ahead and build it in themselves and not wait for the provider to do it," said Stephan Adams, president of Adamation, Inc. in Oakland, Calif., a developer of applications for both Next and Taligent. "I think that is a tremendous win."

Senior writer Melinda-Carol Ballou contributed to this story.

Briefs

Dynasty Technologies to provide interface

Dynasty Technologies, Inc. said it will provide an interface between its Dynasty Development Environment Version 2.0 and **Open Environment Corp.**'s Encompass, an application framework based on the Open Software Foundation's Distributed Computing Environment.

Software Emancipation raises $1.25M

Software Emancipation Technology, Inc. said it raised $1.25 million in private funding from current investors, including **Charles River Ventures** and **Draper Associates**. Software Emancipation makes development software called Paraset, designed for teams using C and C++ languages.

Team develops Smalltalk products

Object Design, Inc. said it has teamed up with **Knowledge Systems Corp.** to provide Smalltalk products and services. Object Design's ObjectStore, an object-oriented database management system, will be included in Knowledge Systems' line of object training services.

HP announces latest platform version

Hewlett-Packard Co. last week announced Version 4.0 of its HP Distributed Smalltalk development platform. The company said this latest version would allow developers to create applications that can run across four Unix platforms and three PC platforms without code changes. Version 4.0 is scheduled for shipment in December. Prices will start at $2,995. HP also said it plans to extend Version 4.0 to support the Object Technology International's Developer team programming environment.

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Developers' attendance low at CDPD forum

By Michael Fitzgerald
SANTA CLARA, CALIF.

The recent CDPD Forum, Inc.'s Software Developers Conference drew precious few independent software developers, but those who did attend said what mattered was the conference itself, not the attendees.

"It's a mistake to gauge the impact of this conference by counting how many developers are here," said Eric Jensen, president of Nomadix, Inc., a wireless consulting and application development firm in Pleasanton, Calif.

He said he hoped the conference would foster multivendor efforts to remove obstacles for developers. "It's not real clear to us as to how to go about effectively developing applications" for the Cellular Digital Packet Data (CDPD) protocol right now, Jensen said.

His wish list would include a single contact number for developers to call to gain a free block of airtime and discounts on cellular modems and other equipment necessary to build and test applications.

Changes, changes

In addition to the conference, the following incremental advances recently occurred in the CDPD market:

- GTE Mobilnet announced commercial CDPD service in the San Francisco Bay area. This is the fourth market (the others are Chicago, Pittsburgh and the Washington/Baltimore corridor) with commercial CDPD service.
- McCaw Cellular Communications, Inc. will announce a variety of training programs, educational seminars and support testing facilities by year's end, according to Allison Koenig, McCaw's independent software vendor development manager.
- Wireless Connect, Inc., based here, said it would ship two application development tools in the first quarter of next year. One is CDPD SDK, for building modem-independent CDPD applications, the other is the CDPD Starter Kit, which combines modem, software and airtime in one package.

Users contacted expressed little surprise at the low developer turnout.

"I doubt that developers will do much of anything until they hear from service providers themselves," said Lee Nolan, a senior telecommunications engineer at Travelers Insurance Co. in Hartford, Conn. "Why sink a good chunk of your budget into writing for this when the network is ... not in place broadly?"

While most of the 415 attendees fell into the true believers category, observers said a little religious revival might spur some positive changes for the market.

"This is how you get the ball rolling. If you keep [bringing industry groups together] people start getting the faith," said David Carnevale, president of Market Vision Consulting in Los Altos, Calif.

"They need to thump the Bible a lot before people will start to develop for this, and this is the genesis" of that effort, agreed Tomas Matos, communications program manager for handheld systems at Microsoft Corp.

If nothing else, face-to-face contact with one another will help correct the wireless industry's lack of knowledge about the components needed to put an effective system together [CW, Oct. 10].

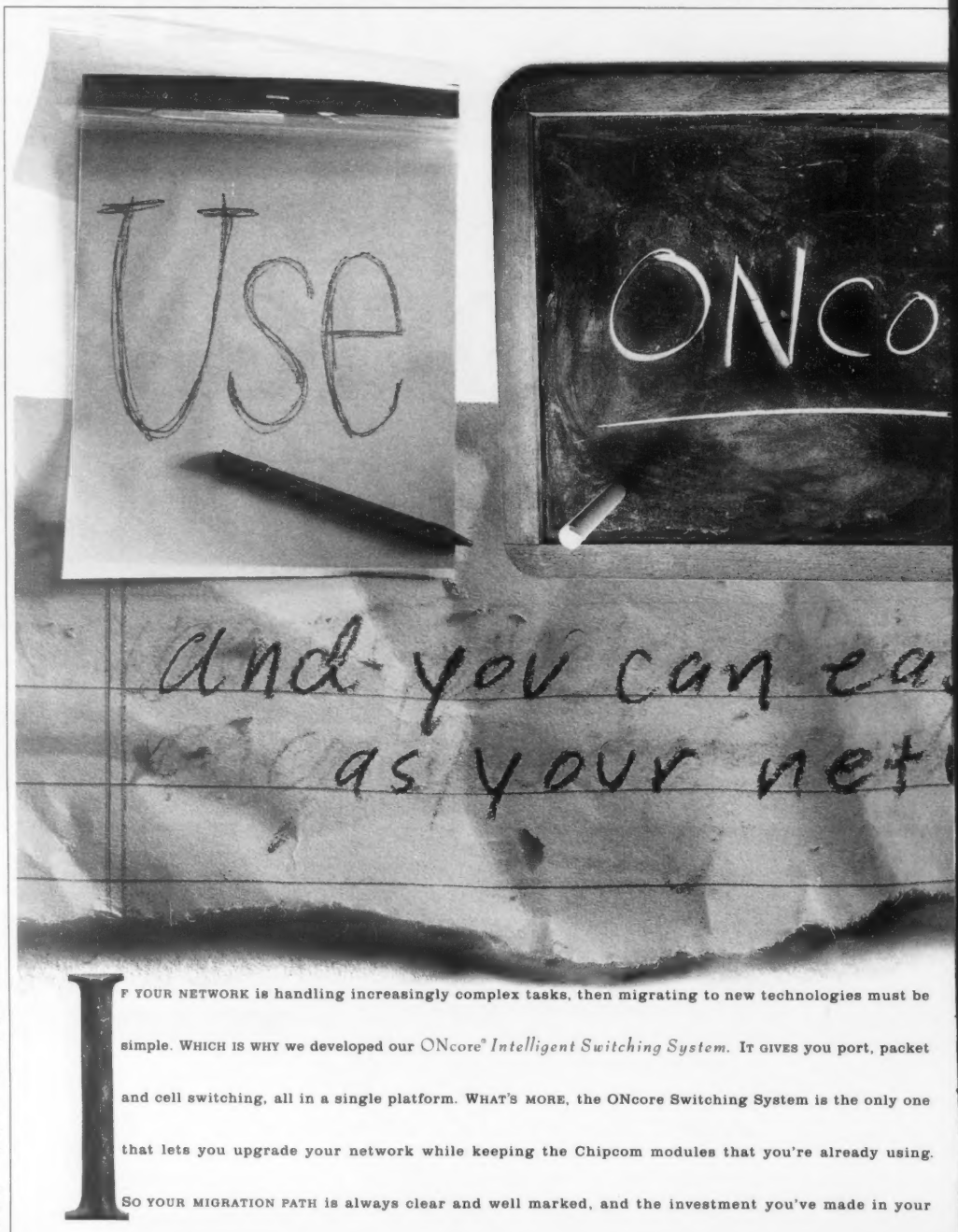
CDPD

CONTINUED FROM PAGE 71

wired to a wireless environment. The rest tend to have "disappointing" performances, said Phillip Shifrin, director of product marketing and development at Business Partner Solutions, Inc. in Westmont, Ill., which sells CDPD middleware. "Customers without IP may be the lucky ones."

Still, most analysts said TCP/IP support makes the twists of wireless easier to unwind with CDPD than with ARDIS or RAM Mobile Data.

"The bottom line is it looks like the CDPD guys have been able to get applications up and running quicker than ARDIS/RAM," Brodsky said.



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ODBC driver market heats up

By Kim S. Nash

Intersolv, Inc. plans to announce today that it is shipping drivers and developer's kits that support the 2.0 release of Microsoft Corp.'s Open Database Connectivity (ODBC) interface, officials at the Rockville, Md., firm said last week.

Intersolv's DataDirect 2.0 family of products are said to be one of the first implementations of ODBC 2.0 from a major provider. Further, the announcement heats up the ODBC market, following rival Visigenic Software, Inc.'s recent exclusive licensing deal with Microsoft [CW, Oct. 24].

ODBC "is a full and confusing marketplace right now that users are going to have a tough time sorting out," said Michael Bragen, principal at Business Management Consulting, a consultancy in Lexington, Mass.

ODBC is a set of specifications from Microsoft intended to give PC application users access to information stored on different back-end databases such as those from IBM, Informix Software, Inc. and Oracle Corp.

Historically a development tools company, Intersolv inherited a set of ODBC drivers and developer's kits when it acquired Q+E Software in April. Q+E's products have been renamed the DataDirect ODBC series. Intersolv built drivers to run on various non-Windows platforms, such as IBM's OS/2 and Sun Microsystems, Inc.'s Solaris, from ODBC in the public domain, which Intersolv reengineered, a spokesman said.

Meanwhile, last week Microsoft agreed to license its ODBC code exclusively to Visigenic, which plans to port the connectivity products to Unix next month. Versions for the Macintosh and possibly OS/2 are to follow.

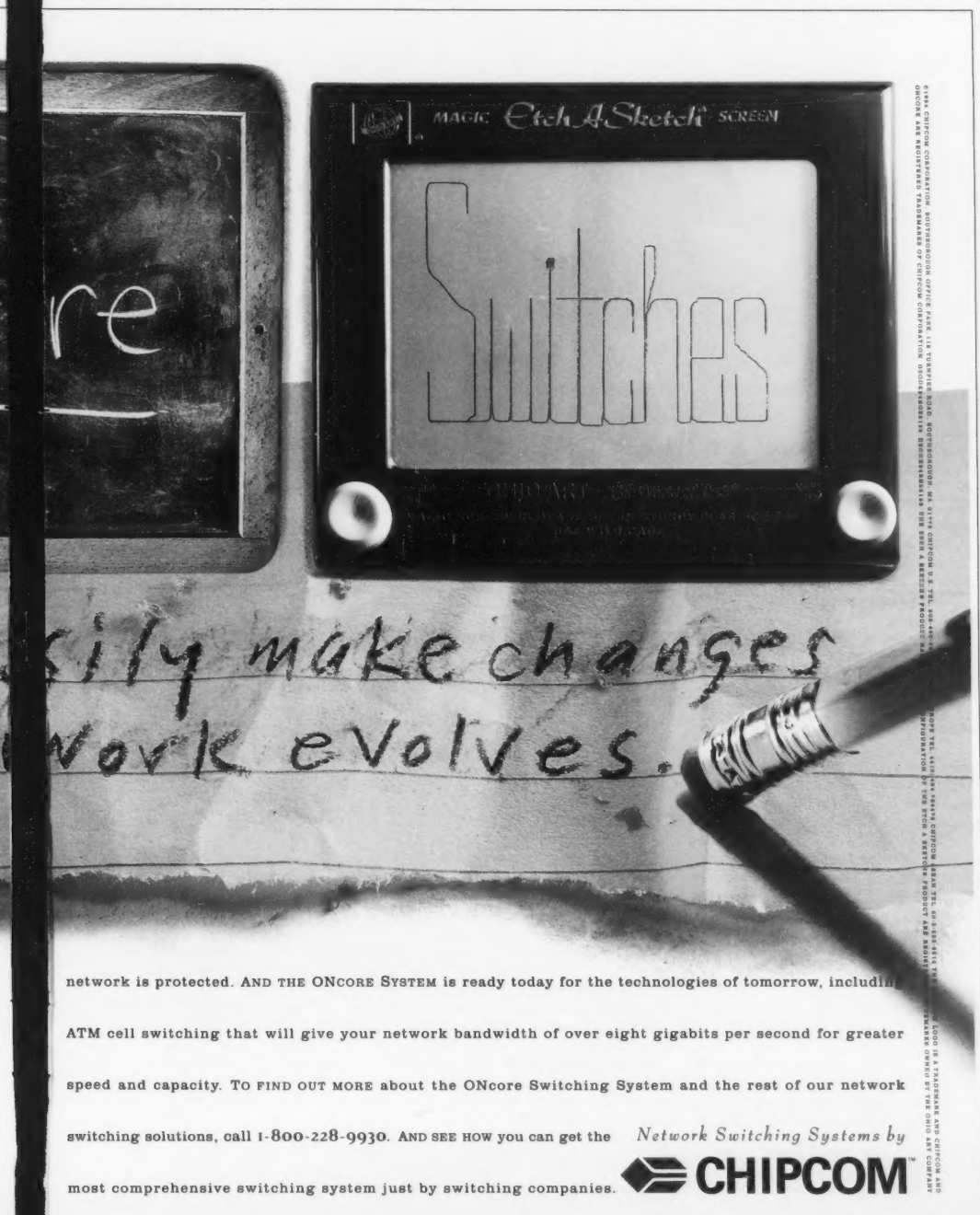
Visigenic's pact with Microsoft is not a threat to Intersolv, according to Dave Waller, DataDirect product line manager at Intersolv. One reason is that Intersolv has added functionality to its drivers not found in the basic ODBC code from Microsoft, Waller said. That includes the ability to access specialized features of backend databases such as stored procedures and triggers.

Better than before

Meanwhile, Intersolv's DataDirect 2.0 drivers, which are due to ship next month, include performance enhancements over the previous version, Intersolv said. DataDirect 2.0 is faster than Release 1.0 of the products, Waller said, but no benchmark comparisons were available.

Whether ODBC products perform well has less to do with the raw code or specifications than with how a third-party vendor builds a given driver around that code, according to Bragen. Users are best off testing a few connectivity options — ODBC, direct database gateways and perhaps middleware such as Enterprise Data Access/SQL from Information Builders, Inc. — before deciding, he advised.

"All ODBC-based products are not created equal, which makes life confusing," he said.



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IT all adds up

After years of taking the rap as a corporate underachiever, information technology is finally getting some credit for paying its own way.

MIT Professor Erik Brynjolfsson's research has found information systems investments have led to productivity improvements. In a multiyear study published in 1993, the Washington-based National Research Council, an independent advisory group to the federal government on technical and scientific matters, concluded that information technology benefits are rarely captured by traditional quantitative measures.

There's also some evidence that chief executive officers are looking more kindly upon computers: Nearly 45% of the 100 respondents to a 1993 Nolan, Norton & Co. survey of CEOs said IS is "one of the most important factors" helping their company succeed. Furthermore, 65% said they received all or most of the anticipated benefits from their IS investments.

But "these sorts of reports might do more harm than good," argues Charles Gold, a research associate at Ernst & Young's Center for Business Innovation in Boston.

Gold's point is that getting a thumbs-up for technology takes you only part of the way. In fact, those positive vibes raise both the expectations and the stakes for IS executives. Chief information officers who can't prove that their IS investments have borne bushels of fruit will soon be kicked out of the garden. Either their bosses will sour on information technology or, more likely, they will start searching for a new gardener.

Our three-part series on demonstrating the value of information technology concludes in this issue with profiles of Corning, Inc. and the U.S. Department of Defense. Together with the previous profiles (see "No Doubt About IT," Aug. 15; and "IT's Got What It Takes," Oct. 3), the series has presented 10 successful methods used by 10 organizations to prove the worth of technology investments.

Each of these methods is noteworthy for its rigor — each puts IS through the wringer — yet none of them are identical. Most of the methods can fit into one of three categories, yet the variety of ways to evaluate technology is striking.

Some companies took innovative accounting or financial concepts and turned them into workable evaluation methods. The "performance-based budgeting" approach used by the city of Sunnyvale, Calif., links spending ceilings to goals and performance measures. The U.S. Department of Defense uses activity-based costing, which budgets the cost of performing a business activity. S. C. Johnson & Son, Inc. borrowed the notion of portfolio management from financial managers and applied it to groups of information systems.

Two companies obtained an evaluation methodology from a vendor or a consultant. Ameritech Corp. applied a method developed by Cogni-Tech, a consultancy in Easton, Conn., to evaluate the effectiveness of information technology. The Watkins Johnson Co. obtained the "CB-90" technique of making build-or-buy decisions from Oracle Corp. and Professor Robert Benson at Washington University in St. Louis.

Many companies have executive review committees or IS user panels evaluate proposals. All too often, these committees fail to work because they haven't developed a satisfactory set of ground rules for evaluating technology investments.

By Alice LaPlante and Allan E. Alter

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That's not the case at JC Penney Co. or Texas Instruments, Inc. Each company has developed its own extensive multistage review process. For example, every internal IS investment proposal at TI must pass three "authorization-to-proceed" reviews. Corning's "stage-gate innovation" process takes each project through five checkpoints manned by both IS and non-IS managers.

Then there's the case of Conoco, Inc., where the manager in charge of the company's executive information system feared his baby would be thrown out with the bathwater during a wave of budget cuts. He managed to come up with a way to show his system's worth.

It all goes to show there is no single dictionary definition of value and no single solution to demonstrate it. Top management at each organization will have its own notion of what makes information technology pay off; IS managers must each make their own case.

But there are some common traits — and, it's only fair to warn, some blatant editorializing and advice-mongering — that readers can take away from our 10 case studies, including the following:

- **Use an evaluation process that not only involves senior general managers in IS purchase decisions but also uses measures that embody their definition of value.** The best way to ensure that CEOs and their top lieutenants understand the value of technology is to have them personally review major initiatives. But this works only if benefits are stated in meaningful business terms.

What's a meaningful business term? A yardstick that goes right to the heart of a company's most important business objectives, such as profitability, increased market share or customer service. Increasing throughput or improving SQL connectivity just doesn't cut it. Enabling a company to cut time to market by three months so it can bludgeon the competition does.

Developing a process on your own and convincing general managers of its mettle is good — it worked at Conoco. But when it comes to demonstrating technology's value to general management, using the same method used by all other functions is better. Few organizations have found such universal yardsticks, and all of them are open to improvement — even Sunnyvale's remarkable budgeting process. But it's the surest way to reach the nirvana of alignment.

- **Take a modular approach to IS investments.** Tackle each project in carefully formulated stages that test the viability and value of the proposed technology. Don't spend any more dollars until each stringent checkpoint has been successfully passed.

Again, the *sine qua non* is that these steps are deemed useful and necessary by general management. Otherwise, the process will be vulnerable to attack as laborious and inefficient. Vince Lombardi once said, "Fatigue makes cowards of us all." He could have said, "Fatigue makes backsliders of us all" and been just as accurate.

- **Quantify as much as possible, but don't allow the corporation to become fixated on hard-dollar savings alone.** Make sure that the approval process provides ample opportunity for you to talk about "soft" benefits. Traditional return-on-investment analyses capture some, but almost never all, of the value of any investment; some benefits defy quantification.

How do you give soft benefits the impact of hard numbers? Find a way to convincingly show the benefits even if you can't count them, and pick benefits that are meaningful to general management.

For example, JC Penney's IS managers made a successful case for a $200 million investment in point-of-sale registers by showing a video of the current checkout counters and a video of a pilot of the new system. When JC Penney's president saw how much faster customers got through the checkout lines with the new system, he quickly agreed to the investment.

- **Make continual surveys of end users an integral part of how IS functions.** Ask users to specify how technology affects employees' ability to do their jobs. That's more actionable and ultimately more convincing than posing abstract questions, such as whether technology contributes to speed, reliability or quality.

One last thought: The IS profession considers itself part of the scientific and engineering community. It embraces terms such as systems, measures and analysis. The profession values precision. Financial bean counters and marketing number-crunchers value numeric measures, too. If both sides agree on which numbers to measure and analyze, they might possibly find common ground.

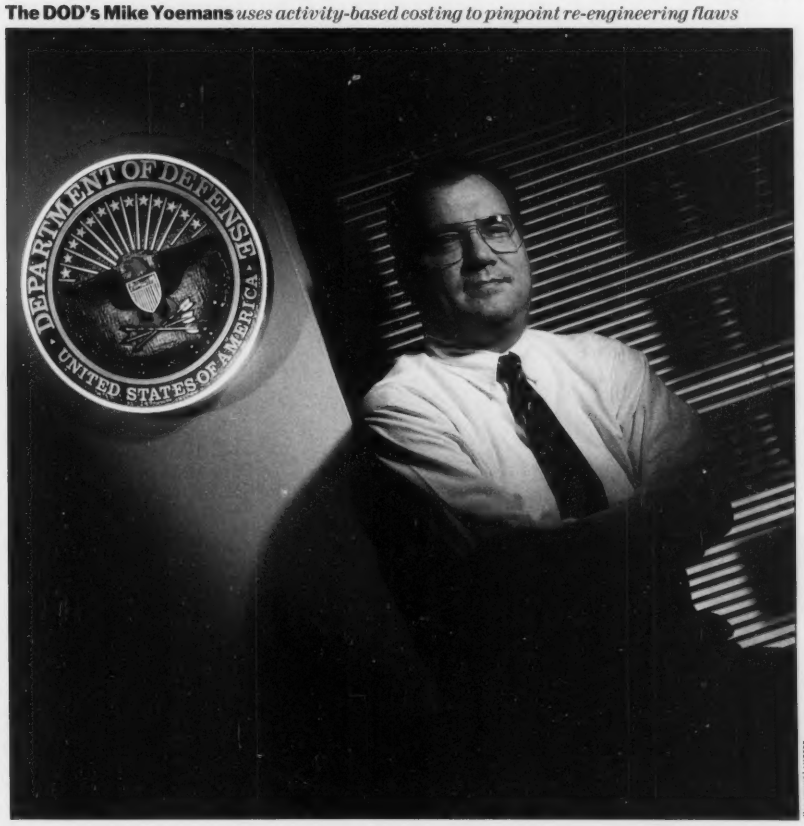
But ultimately, demonstrating the value of technology is something many technical professionals find discomforting. It's a deadly serious exercise in the art of salesmanship. It's a combination of business understanding, psychological insight, effective rhetoric and killer instinct. If properly used, the numbers are just a means to make an honest but convincing argument.

So when budget season rolls around and it's time to play "bet your career" on a new information technology investment, hold off before you start pecking at that spreadsheet.

Think of the CEO as an antelope with an MBA. Put yourself in the head honcho's hooves.

Then go get 'em, tiger.

The DOD's Mike Yoemans *uses activity-based costing to pinpoint re-engineering flaws*



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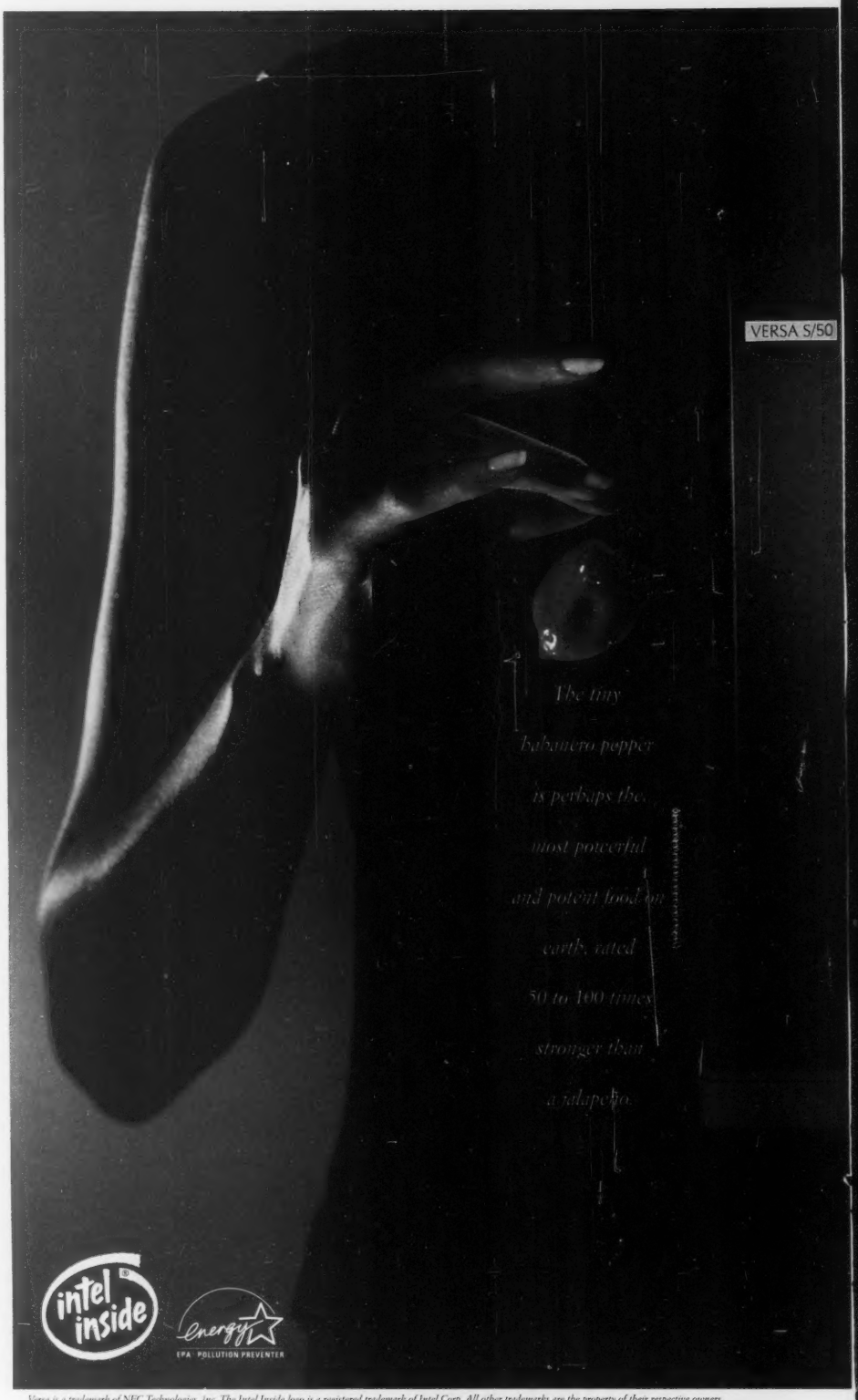

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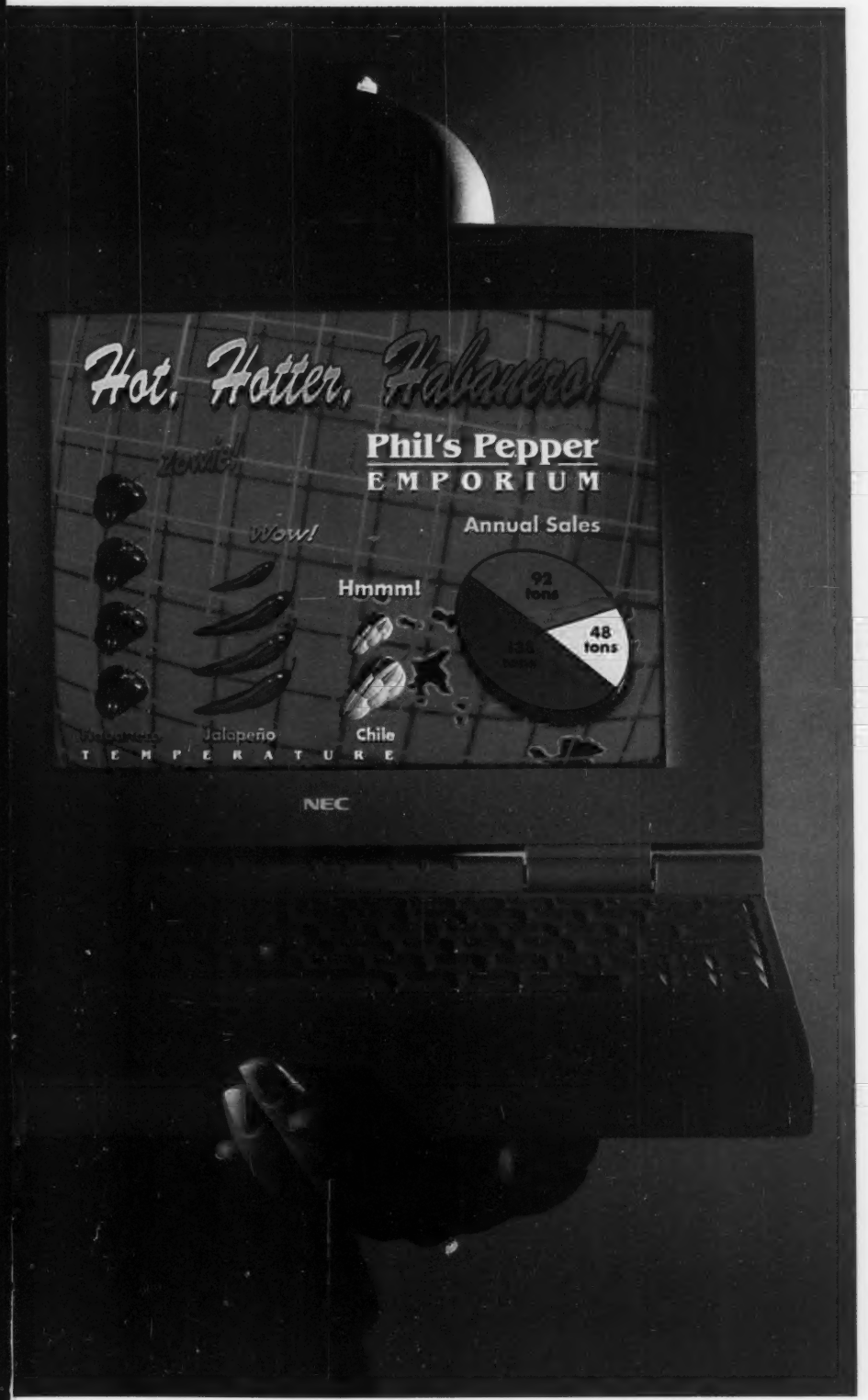

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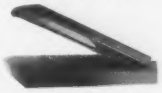

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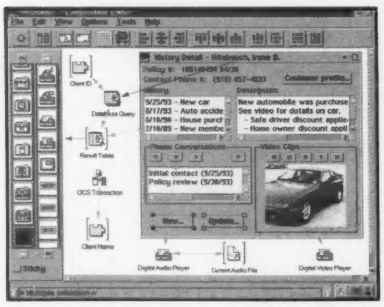

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Corning, Inc.
The stage-gate innovation process

All investment decisions — IS included — go through the same gauntlet

When Harvey Shrednick joined Corning, Inc. as its senior technology executive nine years ago, his immediate concern was that various Corning businesses weren't getting full value from the massive information systems investments the firm was making.

Much of this was due to organizational issues: Some divisions and business units were spinning out of control on technology projects. Various departments were installing incompatible systems, networks and software and were reinventing the wheel time and time again because they were unaware of the IS efforts going on elsewhere in the firm.

Shrednick partly addressed this issue early in his tenure by assigning account managers to each business unit. An account manager — primarily a technologist — acts as a liaison between the central IS office and the business, charged with developing and aligning a technology strategy that makes sense for that particular operating unit.

Still, Shrednick knew non-IS managers, account executives and central IS also needed a methodology to judge the potential and actual value of a particular technology investment.

Shrednick chose to adopt a five-stage process already used by Corning's non-IS managers.

At Corning, the process is called "stage-gate innovation," and it prescribes a specific way to estimate the potential benefits of any Corning initiative. The process was formulated in 1986 by a group of product managers from the Corning, N.Y.-based company's commercial products businesses.

The stage-gate innovation process soon permeated virtually all aspects of Corning's operations. Today, the process is deployed globally and used to benchmark everything from new product development and departmental re-engineering projects to proposed IS efforts.

The stage-gate process had a threefold purpose. First, Corning needed to reduce development time for bringing products to market. Second, it wanted a higher proportion of internal research projects to result in commercially marketable products. Third, managers hoped to spot and kill less promising projects earlier in the development cycle.

"Because each phase has a number of check-offs required before you can move on to the next phase, this process provides a terrific way of packaging the financing and helping you understand the risks and paybacks of a particular project," says Maggie Coffey, a re-engineering change facilitator at Corning.

> *"This process provides a terrific way of ... helping you understand the risks and paybacks of a particular project."*
>
> Maggie Coffey, re-engineering change facilitator, Corning, Inc.

Coffey used the five-step innovation process to revamp the order fulfillment function at Corning Asahi Video Products Co., Corning's television glass panel and funnel business, beginning in 1991. Using the stage-gate methodology "made the project an easier sell," Coffey says. "Re-engineering always presents a fairly high risk. The innovation process framework made the idea more palatable." (Ultimately, Corning Asahi's re-engineering effort won *Computerworld*'s 1994 Re-engineering Team of the Year Award [CW, Jan. 17].

A closed gate at each stage

An essential part of Corning's methodology — hence, the name stage-gate — is the requirement that each project pass through a "gate," or a stringent review by a panel of technologists and business users, before moving to the next stage.

Whether the issue is developing a new product for Corning's medical market, a decision to enter a certain industry niche or an IS investment, the same rules apply. The business unit and the department that carries out the project must first research the technological and business issues that arise in the proposed project and then consider the feasibility of the project. Next comes a test of the project's practicality and a cost-benefit analysis before the new product or system is permitted to go into production.

Testing stages

For Shrednick's staff, Stages III through V (see chart) are especially important. These stages involve the application developers, the IS sponsors, the business sponsors and the eventual end users of the application.

Harvey Shrednick, *Senior vice president of information services at Corning, Inc.*

For example, Shrednick is currently in the middle of testing the potential value of various client/server computing initiatives. He has built a client/server laboratory to revamp the skills of mainframe programmers and analysts, while also testing the viability of tools and technologies in the client/server arena.

When IS projects reach the fourth stage — cost-benefit analysis — intangible benefits are carefully noted and described in recognition that often the most valuable technology investments may be difficult to quantify in strict dollars-and-cents terms, Shrednick says.

Ultimately, it is the affected business unit's decision whether to fund a particular IS initiative. "Even if a technology proposal passed through all five innovation steps with flying colors, it wouldn't be implemented unless a particular business unit saw specific value for its specific purposes and agreed to fund implementation," Shrednick says. "This prevents [information technology] from becoming an ivory tower."

Previously, the stage-gate process ended when a product reached the commercialization stage. However, Corning managers recently deemed it important to extend the process to deal with managing a product or process throughout its entire life cycle. Corning managers are working on operational guidelines that will lead business teams to anticipate the future and make sure the product or process continues to satisfy the needs of customers.

GATEWAYS to INNOVATION

Today, no Corning IS project can be put into production without passing the following stage-gate steps

BUILD KNOWLEDGE

Process:	Define technology and business issues
Goals:	Formulate preliminary goals
Timetable:	Can take months
Players:	Affected business unit and its IS liaison

DETERMINE FEASIBILITY

Technology:	Are current products sufficient?
Skills:	Does present staff have them?
Time and cost:	Are projections workable?
Risk factor:	Is the potential downside acceptable?
Players:	Affected business unit and its IS liaison

TEST PRACTICALITY

Pilot:	Build a prototype of the system
Experiments:	Test various tools and technologies
Involvement:	Make development interactive
Reviews:	Keep business users abreast of progress
Players:	Application developers, affected business unit and its IS liaison, central IS

PROVE PROFITABILITY

Analysis:	Do a traditional cost-benefit analysis
Benefits:	Predict intangible benefits
Players:	Affected business unit and its IS liaison, central IS

COMMERCIALIZATION

Deployment:	Utilize the finished application or system

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U.S. Department of Defense

Activity-based costing

When the Pentagon's Mike Yoemans wanted to know which IS investments really provided value, the answer was as clear as ABC

At the Pentagon, where Mike Yoemans is director of business process improvement for the U.S. Department of Defense (DOD), activity-based costing (ABC) is fast becoming a mainstay in the drive to re-engineer critical processes and peg the value of information systems investments.

ABC has already helped the DOD gain approval for a medical videoconferencing application and a front-line client/server system (see chart below).

The idea behind ABC is simple: Rather than lump together all costs of running a department or functional area of an organization, such as marketing or finance, the expenses are divided and allocated according to output.

For example, using traditional accounting methods, a purchasing department would list its budget by line items such as personnel, office supplies and capital equipment. The departmental budget would also reflect fixed or overhead organizational costs, including computer network services and host CPU processing.

But with ABC, the purchasing department would calculate the cost of a specific output, such as generating a purchase order. An ABC analysis would add up such things as the man-hours involved, the materials used (paper, printer ribbons, etc.) and overhead costs (rent, computer services, etc.).

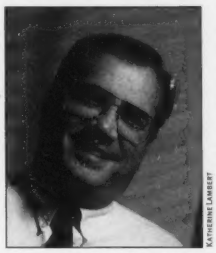
The benefit of ABC is that it "provides an outstanding way of benchmarking your existing processes and figuring out ways to improve them," Yoemans says. ABC's success is evident. Since the business process re-engineering department was funded four years ago, DOD managers have been lining up for the services of Yoemans and his staff. To date, 400 projects using ABC have been initiated, and interest keeps growing, he says.

Pinpointing problems

Among other things, an ABC analysis makes it startlingly clear when waste or inefficiency is bloating a process. For example, an ABC analysis at Fort Eustis in Newport News, Va., revealed that it costs a whopping $1,400 just to process the paperwork in a job order.

This type of information is invaluable during a business process re-engineering effort because it pinpoints problem areas, Yoemans says. Once these improvement opportunities have been identified, solutions can be discussed.

One recent IS project with demonstrable value — thanks to ABC — is a telemedicine application being installed around the world. DOD saw tremendous inefficiencies in the way it shuttled servicemen and women and their families to medical facilities.



KATHERINE LAMBERT

"We thought we would be able to provide better medical services at lower cost to DOD personnel if we could eliminate all this excessive travel," Yoemans explains.

The ABC analysis showed that more money was spent on travel and accommodations than on health care. The analysis also showed that installing teleconferencing and videoconferencing technologies would actually lower costs as well as increase patient care. Soon, rather than ill or injured soldiers being shipped from one military hospital or clinic to another for a consultation with a medical specialist, patients' visits could well be "virtual."

During Operation Desert Storm, the Marines found they desperately needed to re-engineer their evacuation process for the wounded.

There was no guarantee that air transport would be available to take the wounded from field hospitals to the city and country, where they could receive long-term medical treatment. During Desert Storm, 60% of the patients transported from Saudi Arabia to Europe were sent to the wrong airport. And 50% were sent to the wrong country.

All casualties transferred to any of the five field hospitals commanded by Gary Breeden, then commander of the First Marine Medical Battalion, were classified by type of injury rather than by name. Therefore, finding the location and status of a patient was difficult.

DOD also spent $111 per soldier just trying to track down the location of evacuated wounded. "That's just administrative work, not counting actual transportation or medical costs," says Breeden, who was also deputy command surgeon of the U.S. Transportation Command until this past August.

Eliminating problems

The DOD used ABC to determine the best way to re-engineer the problem. The ultimate solution was Transcom Regulating and Command and Control Evacuation System (TRACES), a client/server-based module developed using commercial off-the-shelf software from Carnegie Group, Inc. in Pittsburgh and DOD-developed applications already in use elsewhere.

The application takes into account such things as the types of injuries, the availability of beds and medical specialists, the availability of planes going to exact destinations and the ultimate destinations of wounded soldiers to determine a one-stop assignment of the appropriate "lift bed" for each patient. Because more data is collected and processed through the system to make these decisions, the problem of not being able to locate a soldier has been eliminated, Breeden says.

> The benefit of ABC is that it *"provides an outstanding way of benchmarking your existing processes and figuring out ways to improve them."*
>
> Mike Yoemans director, business process improvement, DOD

Because the ABC methodology is so exact, the benefits of TRACES were immediately apparent. The $111 spent to track the location of a wounded soldier has been cut to $28. The cost savings on the other 67 inefficiency points are such that TRACES will pay for itself in four years. "And that's in peacetime," Breeden says. In a war, these costs would be recouped even more quickly, he adds.

The drawback of ABC? Yoemans warns that it measures costs, not effectiveness. For this reason, Yoemans promotes an educating and judicious use of ABC — usually in conjunction with other re-engineering tools such as process modeling, transaction flow analysis, benchmarking and what-if simulation. ABC alone isn't the answer, he says. "It's essential to keep comparing what we're doing against industry best practices as well as keep an eye on where we want to be in the future," he says. ■

LaPlante is a free-lance writer in Woodside, Calif. Alter is a *Computerworld* senior editor, Management.

ABC at the DOD

Activity-based costing is an integral part of how the U.S. Department of Defense makes business process re-engineering decisions

STEP 1. "AS-IS" PROCESS MODELING

A. Form a committee
   1. Include employees and managers from process being re-engineered
   2. Include representatives of all functions and levels
B. Create a model of current processes
C. Identify discrepancies, misunderstandings and bottlenecks

STEP 2. ACTIVITY-BASED COSTING ANALYSIS

A. Break the entire process into its various activities
B. Calculate the exact cost of each activity

STEP 3. IDENTIFY IMPROVEMENT OPPORTUNITIES

A. Focus on activities that provide little or no value
B. Focus on activities where costs far outweigh the overall contribution
C. Specify ways to improve the process, cut costs or both

STEP 4. DISCUSS SOLUTIONS

A. Brainstorm to improve the process
B. Narrow down possibilities

STEP 5. SIMULATE THE "COULD BE" PROCESS

A. Do an ABC analysis of proposed solutions
B. Compare the "as is" results to the "could be" results

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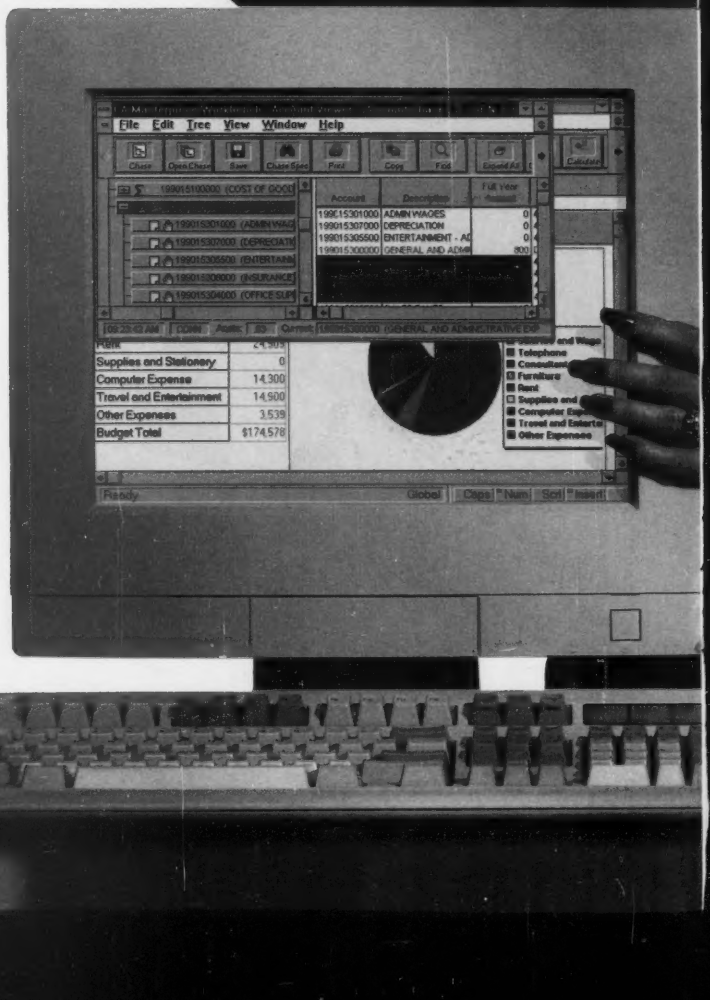

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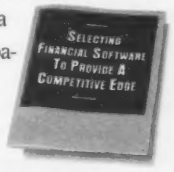

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THE POLITICS OF PAUL STRASSMANN

Strassmann campaigns vigorously for continuous, managed change — the kind that employees can embrace instead of fear

BOOK REVIEW

BY PAUL GILLIN

"Strassmann is the kind of iconoclast whose plain talk nevertheless makes you feel that while he may be saying something you don't want to hear, it's for your own good."

Politics is the dirty little secret information systems people don't like to talk about. And until recently, they really haven't had to. Technical wizardry was enough to guarantee a reasonable amount of IS success.

But all that's changed. Career expectancies for chief information officers are plummeting because IS managers are the nexus of three intense pressure points: pressure from management to perform, pressure from users to open up and pressure from the industry to be on top of the latest technology rage.

Into this maelstrom steps longtime CIO Paul Strassmann with a refreshingly candid new book, *The Politics of Information Management*. The 560-page volume is as honest as its title. Strassmann is the kind of iconoclast whose plain talk nevertheless makes you feel that while he may be saying something you don't want to hear, it's for your own good.

Strassmann has come into his own in recent years as a sort of conscience for IS management. His 1990 book, *The Business Value of Computers*, punctured many myths of IS return on investment by skewering them with their own flawed statistics. *Politics* is likewise a book largely about what's wrong with IS management, and its conclusions are too reasonable to be ignored.

There is a lot of language here that IS executives will not want to hear. For example, Strassmann lays waste to the syndrome of IS managers requesting bigger and bigger budgets to replace systems that should have been built properly in the first place. He skewers highly structured development methodologies and acquisition procedures because they stifle innovation and inhibit flexibility. He asserts that IS costs should drop significantly during the next several years because of improvements in hardware price/performance and software reusability. And if they don't, there's probably something wrong with you.

Critical words

Strassmann saves his choicest words for business process re-engineering, the violent and destructive nature of which he likens to everything from a coup d'etat to Stalinism. Lambasting radical change as demoralizing and ultimately catastrophic ("U.S. industry is under competitive attack . . . [but] that does not justify declaring war on your most educated and experienced cadres"), he campaigns vigorously for continuous, managed change — the kind employees can embrace rather than fear.

But all is not gloom and doom. *The Politics of Information Management* has plenty of advice and a fundamentally upbeat message for CIOs who understand and manage the political process. The seven-page chapter titled simply "Survival" should be required reading for new IS managers. It lays out in simple, bulleted form the steps a newly appointed CIO should take to make a quick impact and turn it into sustainable success.

Another chapter, titled "Roles," spells out simply and persuasively a manifesto for CIOs to return to their origins as technology managers. Those who don't, Strassmann argues, will become victims of the creeping outsourcing beast, a monster that will gain strength as information technology continues its diffusion into the corporate mainstream.

What I didn't like about *Politics* was its lengthy excursions into topics that are less compelling — and less entertaining — than the plain-talking stuff on organizations. The book opens with a dense dissertation on architectures and closes with a detailed 90-page examination of the U.S. Department of Defense's Corporate Information Management program, an initiative that will be of marginal interest to those who, unlike Strassmann, weren't involved.

But readers who persevere to the end will be rewarded with Strassmann's glossary, a hysterical verbal romp through the terminology of the trade. With definitions such as "Methodology: A procedure that I understand and like" and "Process re-engineering: A game for locating employees who should not have been employed to begin with," the glossary alone is worth the book's $49 price.

The Politics of Information Management is published by Information Economics Press in New Canaan, Conn. To order, call (800) 800-0448. ■

Gillin is *Computerworld*'s editor. He can be reached on the Internet at pgillin@cw.com.

Calendar

NOV. 5-11

18th Annual Symposium on Computer Applications in Medical Care. Washington, Nov. 5-9 — Contact: American Medical Informatics Association, Bethesda, Md. (301) 657-1291.

Client/Server ROI and Scalability: An Answer to the $65,000 Question. Hilton Head, S.C., Nov. 6-8 — Contact: The Yankee Group, Boston, Mass. (617) 367-1000.

Fifth Annual Conference: Applications of Software Measurement. La Jolla, Calif., Nov. 6-10 — Seminars include: "Mad About Measurement"; "Risk Assessment of Software Systems Acquisitions"; "The Cost of Quality: Really Measuring Software"; "Lessons Learned: Modeling the Dynamics of Software Development"; "Simplifying Function Points: Small is Beautiful"; and "The Future of Metrics: Trends and Possibilities." Sponsors: McCabe & Associates and LDRA Technology. Contact: Software Quality Engineering, Jacksonville, Fla. (904) 268-8639.

Xplor 15th Annual Electronic Document Systems Global Conference and Exposition. Phoenix, Nov. 6-11 — Keynote: "Future View: A Look Ahead" by Daniel Burrus of Burrus Research Associates, Inc. Contact: Xplor International '94, Pacific Palisades, Calif. (800) 926-3976.

Business Process Analysis: Work Process Assessment and Redesign. Chicago, Nov. 7-8 — Topics cover a wide range of elements in business process re-engineering, including methodologies, logistics and analysis. Contact: International Quality & Productivity Center, Upper Montclair, N.J. (201) 882-8684.

The 1994 National Conference on Electronic Records: Defusing the Corporate Time Bomb. Chicago, Nov. 7-9 — Cost: $975. Contact: Cohasset Associates, Inc., Chicago, Ill. (800) 200-7667.

1994 Government Microcircuit Applications Conference. San Diego, Nov. 7-10 — Keynote: Arati Prabhaker, director at the National Institute of Standards and Technology. Contact: Palisades Institute for Research Services, Inc., Arlington, Va. (800) 787-7477.

The Great Lakes SQL Server Users Group 1994 Annual Conference. Chicago, Nov. 10 — Contact: Simon Mireles, AZ Databases, Inc., Skokie, Ill. (708) 933-0369.

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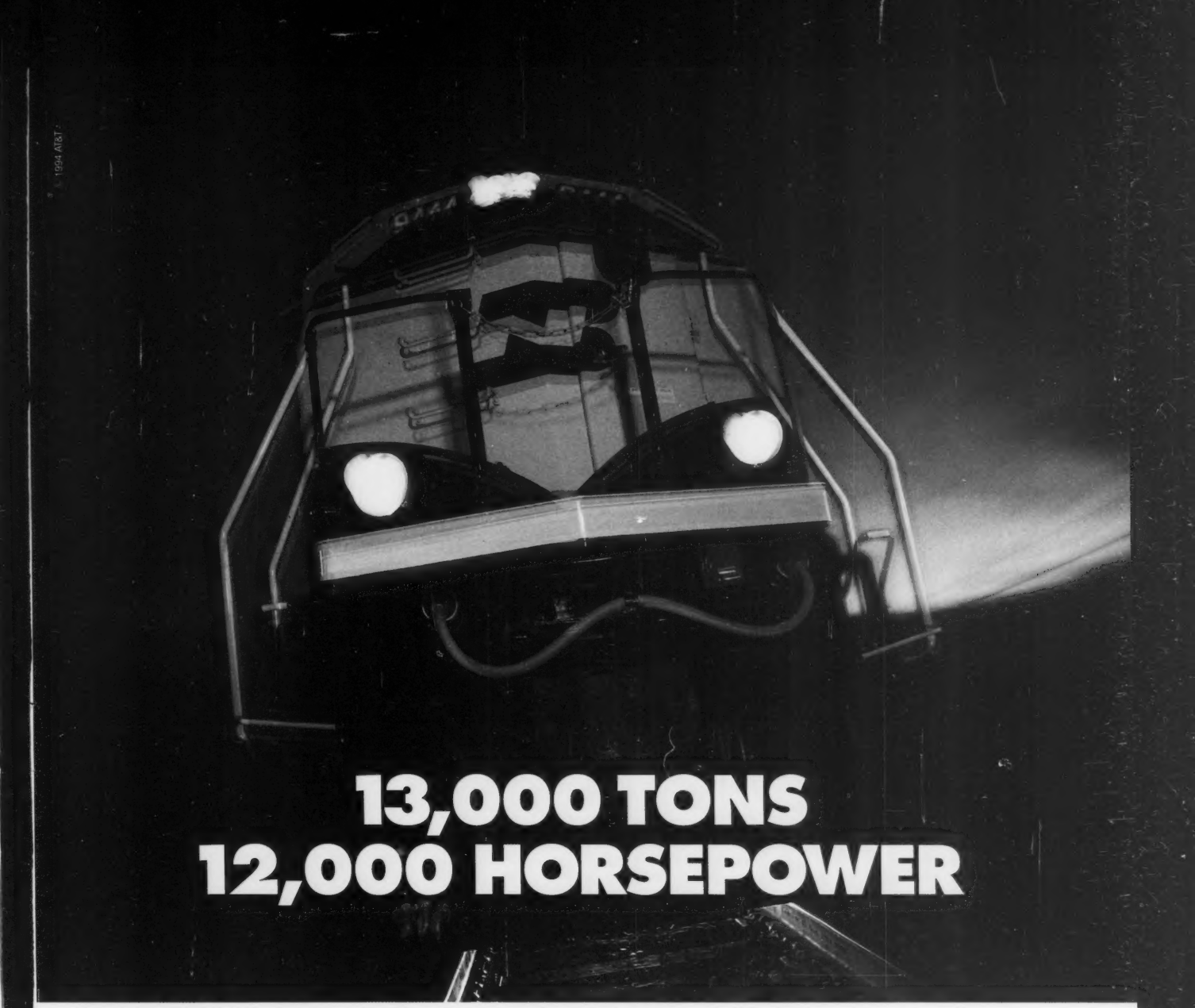

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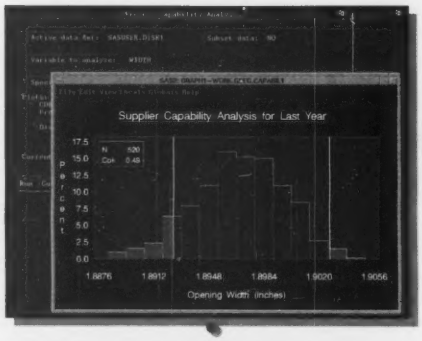

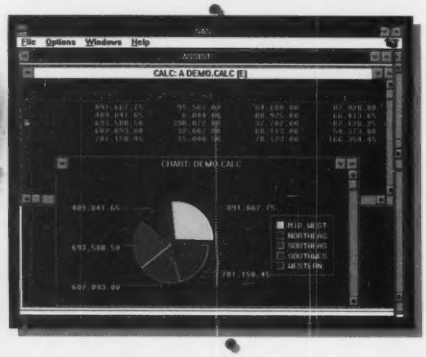

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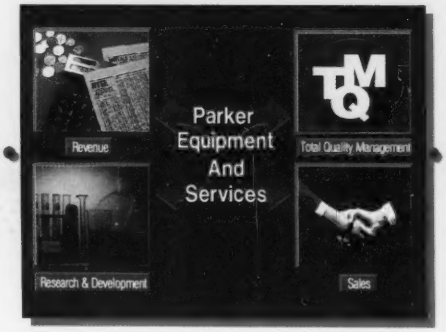

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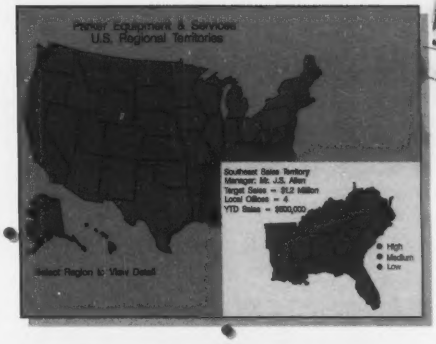

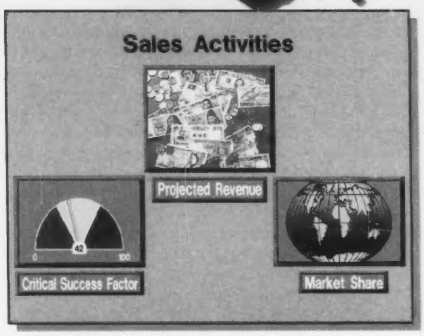

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SOUND OFF!

Does client/server computing represent a fundamental shift in the way we do business, or is it merely a new name for the same old thing? Two industry experts debate the point.

Business

By Paul J. Dravis

Client/server is not a fad. It represents a fundamental shift taking place in the industry and ensures that we are not going back to the old ways of doing business. Mainframes have been recast as enterprise servers, and workstations are used as portals to the expanding universe of network-based services.

Jose Ruiz

PAUL J. DRAVIS: You better believe client/server is for real

Our expectations of what computing is all about now extend beyond transaction processing and end-user productivity tools. We now communicate with business partners and access news and information services electronically. Use of groupware products continues to grow, and deployment of desktop conferencing is on the horizon.

This is the real world of client/server.

I believe the client/server approach is not so much about distributing applications logic across a number of hardware platforms — although this tends to be a natural outcome — as it is about blending a variety of technologies into completely new types of business solutions. With the advent of client/server, our focus on what is possible has shifted from the limited confines of data processing to a larger vision encompassing the activities of collaboration, communication and information sharing.

Yes, we've heard about the complexity and high costs associated with the development, implementation and ongoing support of client/server applications; these bring about many unsettling feelings as we push forward into this new world. But the old, centralized world and the client/server world are very different, not only in capability but also in approach and maturity.

Primary among the benefits of the client/server approach are flexibility and choice.

Take the case of three business units accessing information on the same database server. One group may use a custom-built application running on a Windows-based workstation, while a second group performs ad hoc queries from a Macintosh, and a third group uses Unix workstations to perform computationally intensive analyses of data. This example illustrates the opportunity to mix technologies and products to address a diverse set of business needs.

The client/server model assumes that the environment is modular, made up of a number of parts operating together. As a result, companies can choose the database engine, operating system and development tools that best suit their needs. Because they can mix and match, companies are also more likely to consider applying techniques such as object-oriented programming to development efforts, incorporating support for interactive video, leveraging electronic-mail and messaging technologies or pursuing mobile computing options as components of our systems.

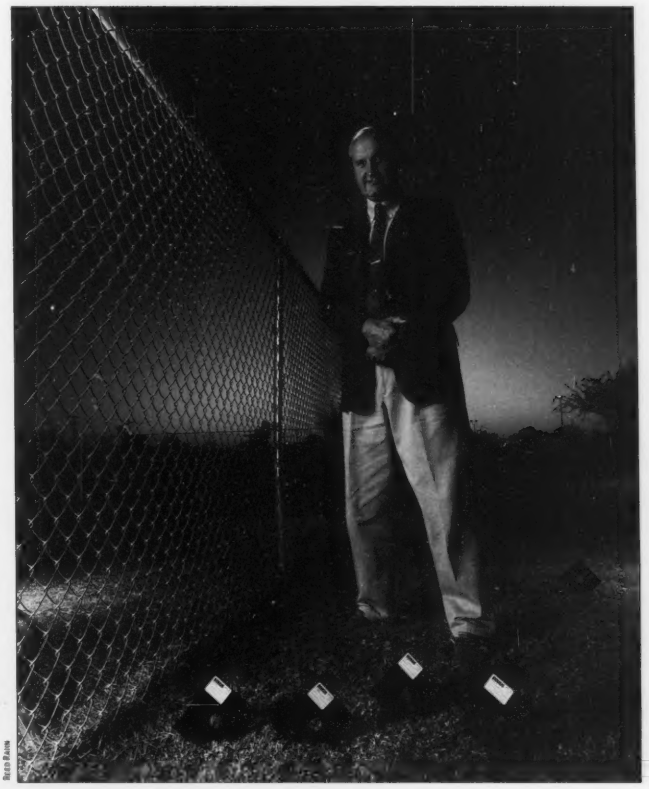
Naysayers point to concerns such as the need for improved integration among the different technological pieces. They also zero in on the lack of robust system and network management tools to assure the cost-effective operation of the technical infrastructure on a 24-hour, 7-day basis.

I believe that the interoperability issues will be addressed more by customers demanding better integration from their vendors than by any other force. The systems and network management

DRAVIS, *page 96*

Dravis is a technology analyst at J. P. Morgan Securities, Inc. in New York. For a copy of the company's report "Client/Server — The New Rules of the Road," contact Dravis at (212) 648-9429.

as usual?



BOB DJURDJEVIC: Client/server is a bunch of hot air

By Bob Djurdjevic

Client/server computing, as I see it today, is a fad. More representative of a marketing image than a serious business trend, the term describes not a product or technology but an amorphous notion that has no concrete, specific meaning.

Ask half a dozen vendors or users what client/server computing means, and you'll get more than half a dozen answers. One common perception — in my mind a misperception — is this: The term suggests the need to change the way we do things. Like many of the definitions floating around out there, this one is too vague to be meaningful. It applies more to the general new order of things than to a technology that's supposed to revolutionize the way we do business.

Eventually, of course, this perception and others like it will crystallize, some of the hype will die down, and clearer meanings will emerge. But in order to understand fully where the notion of client/server computing came from, we have to go back a bit in history. So bear with me.

Computing as we know it evolved from the concept of the central processing unit, known first as a mainframe, then minicomputer, then PC. Size aside, the three are more similar than different; in each, the brainpower is concentrated in a single place.

In the early 1980s, it became apparent to vendors that emerging standards must assume a single focal point: the PC. Just as it was with the mainframe and minicomputer, everything else was peripheral to the CPU. At the same time, it became clear that if these PCs were ever to become truly useful to business, they would have to be connected to a central server. With the dearth of hardware, software and standards to do that, the concept of client/server was born.

What the concept couldn't do was provide the tools needed for client/server. What it could do is give a new name to the latest variant of the same old thing. When I hear people discussing the merits of client/server technology, I confess to a certain sense of deja vu. What I hear described is what I used to call — 10 years ago — co-

DJURDJEVIC, *page 96*

Djurdjevic is president of Annex Research in Phoenix and editor of "Annex Bulletin." He can be reached at (602) 956-8594.

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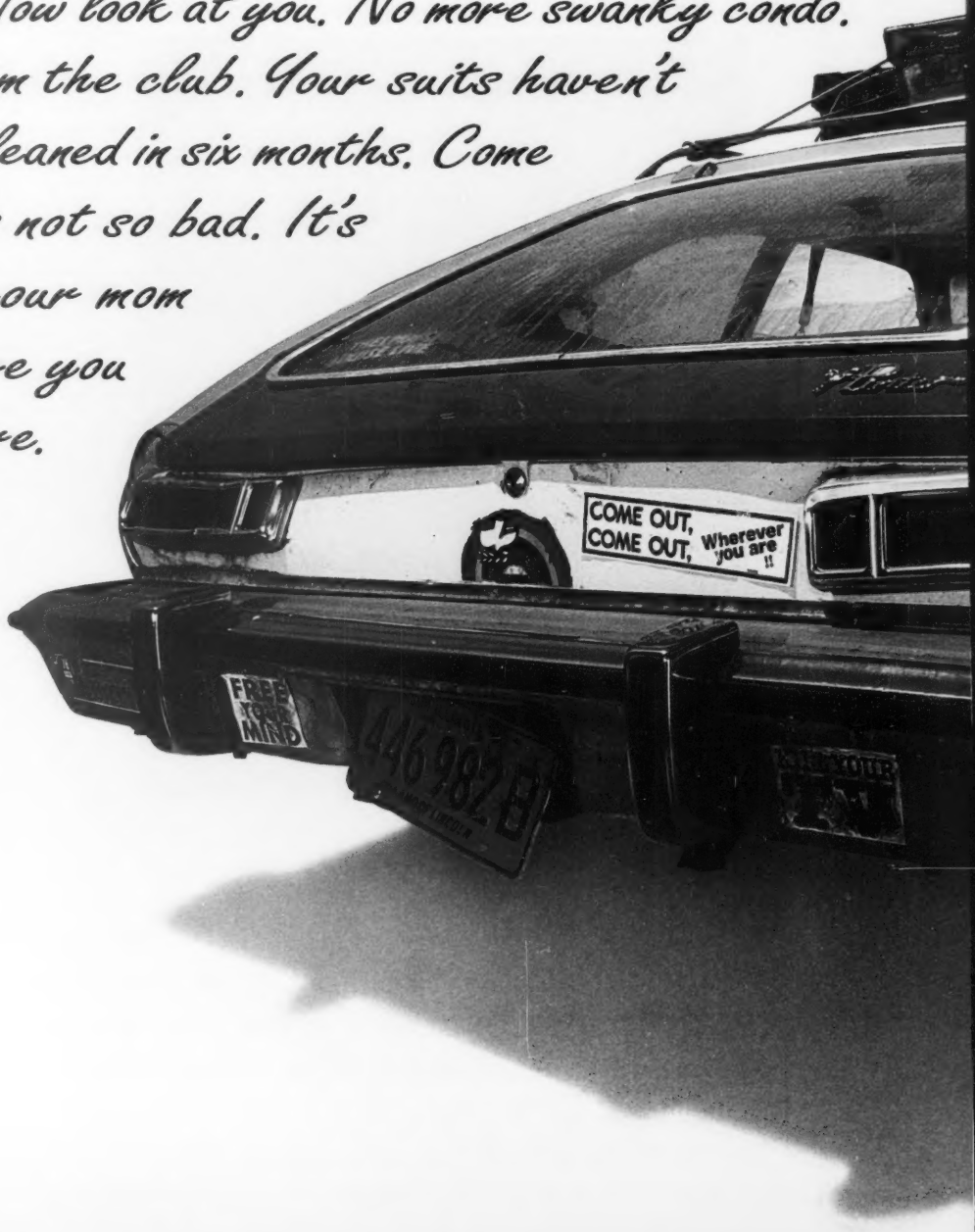

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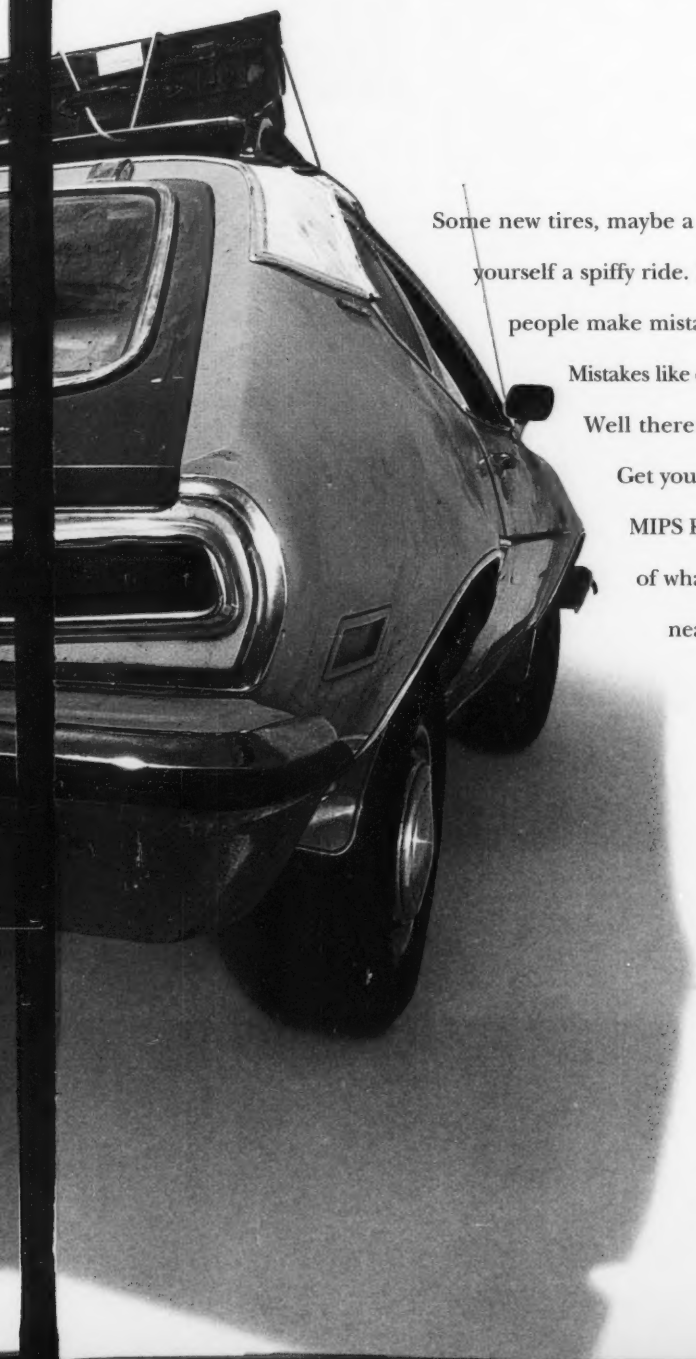

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DRAVIS, *continued from page 92*

issues are significant and provide an excellent opportunity for software developers to bring new products to market.

In addition to requiring the technology pieces to work together, client/server depends on the integration of data center and LAN internetworking support teams. I think that successful implementation of client/server and the continued growth of this market require the melding of many disciplines associated with data center management with the entrepreneurial spirit of LAN internetworking.

One cautionary note: Because client/server is new and different, it's easy to confuse the means from the ends in a development effort. The one rule that still applies is that organizations should proceed with a clear understanding of their business needs. The use of the client/server design model should be the natural result of an analysis of business objectives.

Entering into a client/server project often assumes attacking a business problem with a relatively clean slate. Therefore, this may prove an opportune time to take a very hard look at how the actual business processes can be improved before the work of the technologists begins.

SOUNDOFF!

DJURDJEVIC, *continued from page 93*

operative or distributed computing. Yet it's only recently that "client/server" has come to connote goodness. Using the expression is like a politician saying, "I'm for democracy." It's a prerequisite for being nominated, let alone elected.

OK, I can hear your objections already. Unlike the dumb terminals attached to the mainframe, clients hanging off the server are not stupid. They are smart enough to be servers themselves. But I'll argue that the concept is the same: You can (and many still do) hang smart terminals off a mainframe. That was distributed computing. How is today's client/server different?

Intelligent remote terminals — essentially simulations of 3270 protocols — were precursors to the PC. Although the PC made its appearance in 1981, no one intended it for serious business use until 1983. So it was not forethought but afterthought that put the PC in the position it is in today.

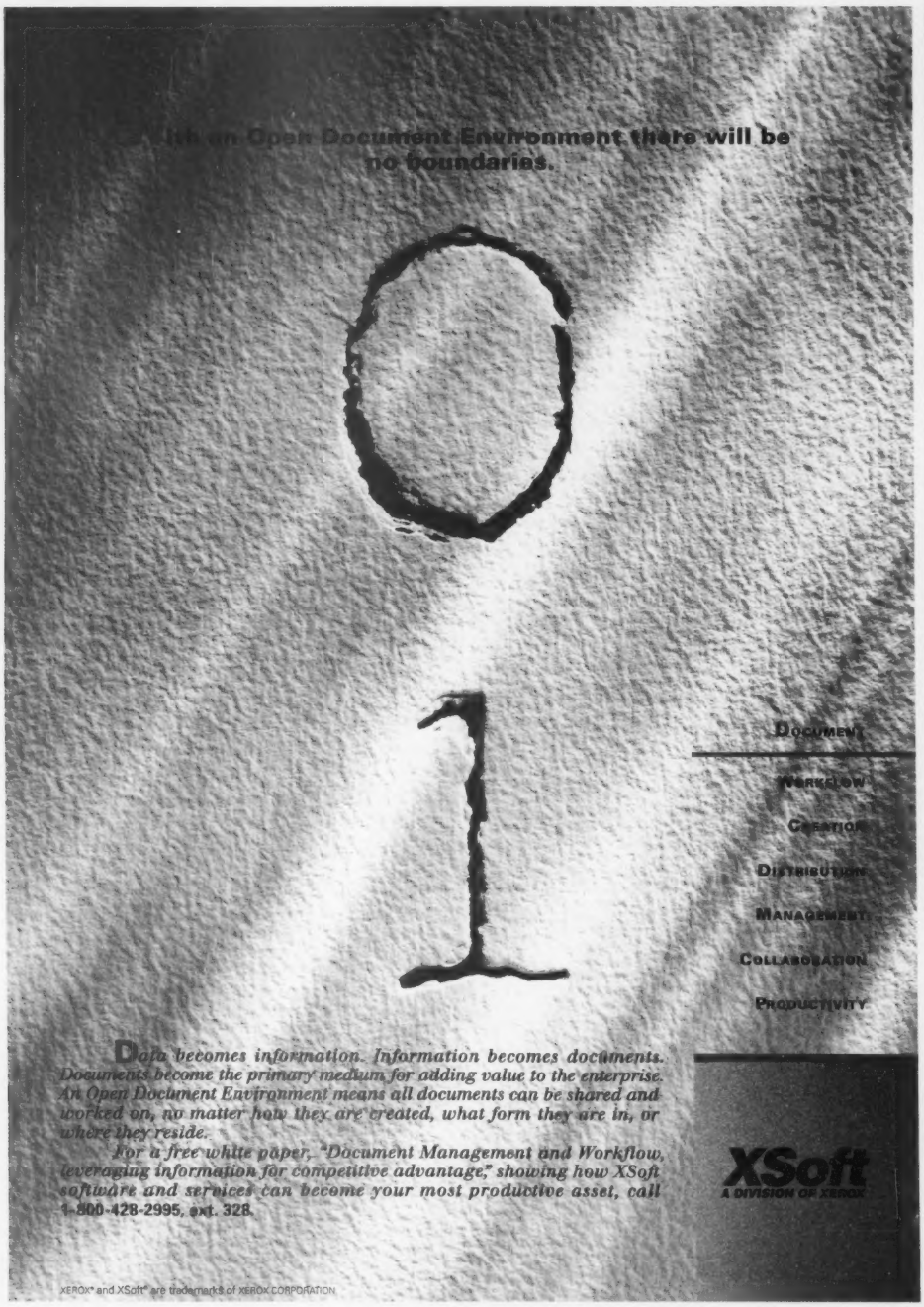
The accident of its birth aside, client/server computing doesn't offer a mature enough tool set with which to develop applications. That's something even its proponents admit. The essential tools are still in the process of developing and maturing, and progress in the last year has been disappointing. So it doesn't make sense at this juncture for customers to develop PC-based applications intended to perform tasks that the mainframe does very well.

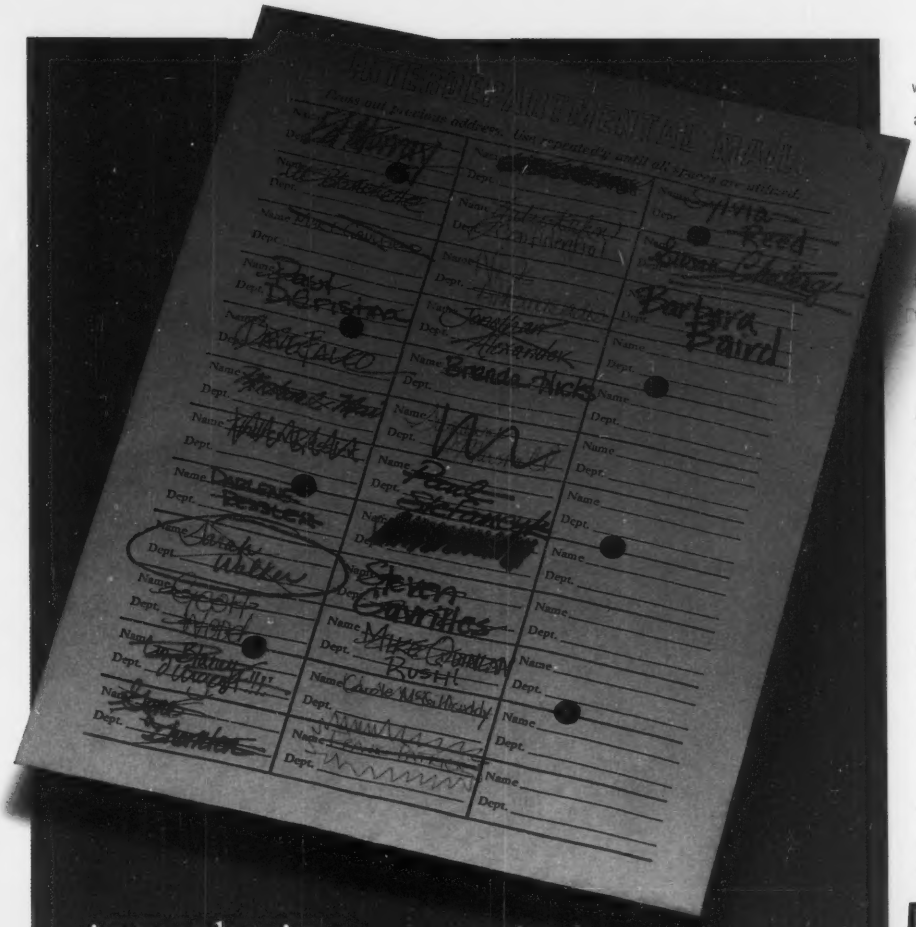
Why abandon the secure environment of the mainframe when client/server networks can't possibly offer the same stability?

More important still is the notion that in the future, the question of hardware and networks will become increasingly less important as the next generation of operating systems, based on object-oriented programming, arrives.

These operating systems, such as IBM's Workplace OS, will shield users from hardware to such an extent that the platform issue will become moot. Once all the operating systems work together, why would anyone think about hardware anymore? I believe we'll see such systems by the end of the decade.

The effort to interconnect computers and share information will be so much easier in the operating system environment that perhaps users and vendors will stop talking about client/server.





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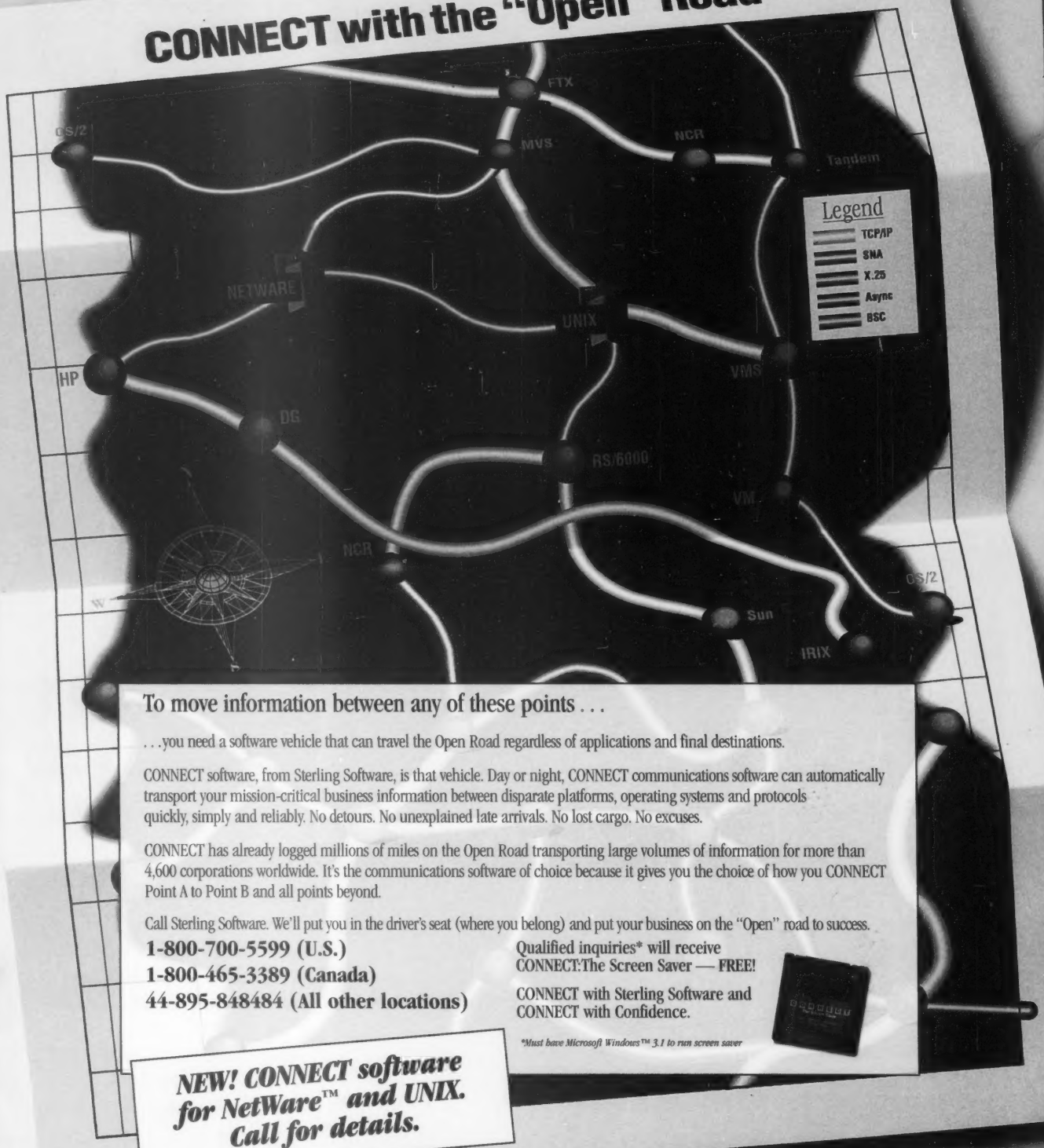

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Computer Careers

Smart Staffing

By Leslie Goff

A client/server migration project launches a rethinking of IS roles and a reorganization at West Coast Energy

Facing a major shift in business focus due to industry deregulation, the information systems organization at West Coast Energy, Inc. in Vancouver, British Columbia, began rethinking its technology strategy and internal organization.

"We were moving from being a sales organization to basically a service organization," says Greg Feltmate, division manager of information systems and technology at the natural gas transportation company. Instead of buying and selling gas, now the company simply ships it.

Feltmate faced two immediate concerns: replacing a mission-critical Unix application running on a Unisys Corp. system with one that would address the company's changing business needs; and migrating the company's technology and IS staff to a newer model.

West Coast Energy chose IBM's RS/6000 and began planning a complete migration to a client/server architecture built around Unix workstations. In addition, Feltmate's staff underwent a transition from traditional mainframe technology to a value-added organization of business analysts.

Feltmate recently spoke with *Computerworld* about his staffing concerns.

CW: What stage are you at in your initial project to migrate West Coast's gas management application?

FELTMATE: That project started in August of 1990, and the first release went into production in November of 1991. We're now using Release 3.2. That summer [1990] we decided the mainframe and support infrastructures weren't right for the future. We thought a distributed model would be more appropriate.

CW: What were your staffing concerns when the project started and, subsequently, as you began a full client/server migration?

FELTMATE: We contracted out the application, but our internal staffers were part of the analysis and design team. We started to migrate our legacy systems off the [Unisys] mainframes in 1992. Our concerns went beyond staffing. We wanted a whole new organization aligned with business processes.

We evaluated what IS employees' roles and responsibilities should be in a business-focused organization, established the requirements and then did a skills assessment. We matched our staff's skills to future roles.

CW: How did outsourcing fit with your strategy to bring your IS organization into the 1990s?

FELTMATE: When we started the migration, we [needed to develop] a whole new skills set. We contracted out for those skills instead and migrated our staff to value-added positions. We wanted to change programmer/analysts into business analysts.

For example, we outsourced our data center maintenance programming. Moreover, we felt we were not able to keep up with the skills required for state-of-the-art technology, and we outsourced that as well. We set up project teams run by West Coast staffers and brought in contractors to handle specific technical areas like advanced design and implementation.

We also wanted to stabilize our head count. We wanted to make sure the staff could continue with us whether we were at a high level or low level of implementation.

Smart staffing, *page 100*

PROJECT TIMELINE

Summer 1990: Client/server migration strategy launched, starting with mission-critical gas management system on an IBM RS/6000.

Spring 1991: Reorganizes IS staff by aligning individual analysts with business units.

Fall 1991: Releases first implementation of client/server gas management application.

Summer 1992: Begins planning migration of legacy systems from Unisys mainframes to RS/6000s.

Fall 1992: Recentralizes IS staff.

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Smart staffing

CONTINUED FROM PAGE 99

We wanted to staff for the valleys, not the peaks. So we outsourced additional skills for the peaks and have kept our staff count level.

CW: What does the organization look like now compared with before?

FELTMATE: Before, our job titles were programmer, programmer/analyst 1, programmer/analyst 2 and systems analyst. Today, we have business analysts, senior business analysts, project managers and applications managers.

Organizationally, we've aligned our applications groups with business processes rather than specific business units. This enables those teams to look after more than one business area or function and to be more integrated into the business processes.

Originally, we tried to disperse the staff out to the business units, but we were getting little receptiveness. Later, we implemented a reorganization to align IS with business processes. We used to be functionally aligned. Now we're business process aligned.

CW: What kind of training was required to change your staff into business analysts?

REX RYSTEDT

GREG FELTMATE guides West Coast's staff in a business reorganization

FELTMATE: We're currently undertaking business and management training. Some people have gone through management programs at local universities.

We're also undergoing training in information engineering concepts, computer-aided software engineering tools, data modeling, project management, supervisory skills and general management skills. Technical training for the client/server environment was up to the contractors. We bought those skills. We weren't interested in having our staff develop those skills.

[Although] we assisted in training and career development, we are making sure our staff understands that career planning is their responsibility.

CW: How high was the staff's anxiety level throughout the transition, and how did you create acceptance of such a major change?

FELTMATE: There was stress. I shouldn't minimize it. People's careers were changing, but we involved [the staff] in the process. They defined where they wanted to be. We stressed that this was not about a job but about career development. We didn't put people in positions they weren't trained for.

CW: Where do the staff reorganization and client/server migration stand today?

FELTMATE: We expected the reorganization to take two years, but we're pretty much where we had expected to be in the fall of 1995.

We have 32 IS staffers. About one-third of our business analysts are still on the learning curve to becoming totally effective in information engineering, taking business concepts and modeling them. We still want to be more business focused vs. technology focused. That will take a while, but we're satisfied that we have transitioned people into the right jobs.

Three years ago, 70% of our staff was providing support to the present and the past, and 30% were looking at future development and planning. Now I would say the numbers have reversed. ■

Goff is a free-lance writer in New York.

Spring 1993:
Starts designing business-focused IS organization; establishes new IS roles; outsources data center functions to third-party provider.

Fall 1993:
Begins implementing new process-aligned IS organization.

Summer 1994:
Outsources maintenance programming.

Fall 1994:
40% of legacy applications migrated to RS/6000s; reorganization one year ahead of schedule; two-thirds of staff transitioned to business analyst.

Fall 1996:
Projected date for complete transition to client/server.

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The Data Processing Department of **ALSAC-St. Jude Children's Research Hospital (Danny Thomas, Founder)** is seeking an individual for the following position:

Programmer/Analyst

This position requires experience with IBM mainframes, databases, COBOL, on-line system analysis, design, and implementation. Experience with IDMS and ADS/A a definite plus. Candidates should possess good technical and business skills as well as good interpersonal communication skills and analytical skills. This job requires an associates degree in business data processing plus three years programming and systems experience or an five years programming experience.

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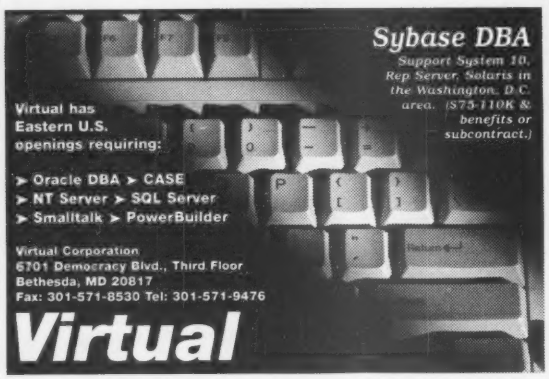

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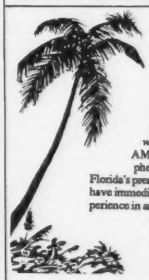

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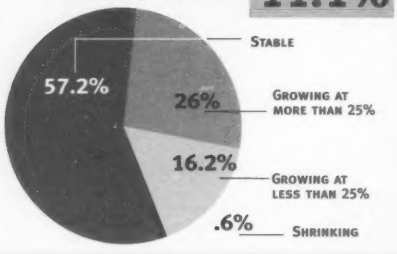

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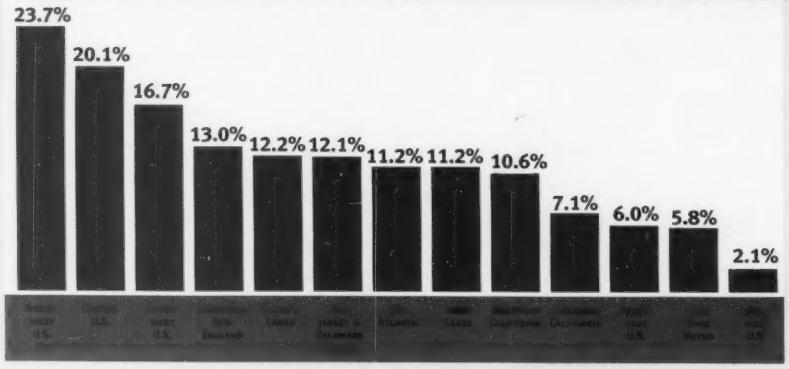

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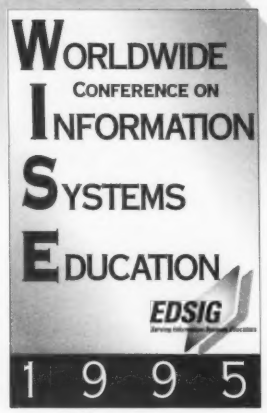

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WISE

Sticker SHOCK

For the moment, the best way to cut a good deal in client/server software prices is to buy in volume and negotiate payment terms and training options

BY ALAN RADDING

Have you seen the price of client/server software lately compared with, say, the cost of a new AS/400 or Unix server? When it comes to client/server application pricing, users and vendors don't agree.

"You've got a situation where the software costs more than the hardware. That's a real problem," says Charlie Browning, director of information services at Andrew Jergens Co. in Cincinnati.

When Jergens migrated off a mainframe to an AS/400, it enjoyed significant savings in hardware and maintenance. But when it came to buying new software, the savings weren't proportionate.

"It's not realistic to expect that client/server software will be cheaper. Users are not giving up features and functionality. In fact, they're looking for more," says Dan Metzger, vice president at Lawson Software in Minneapolis.

Decisions, decisions

The actual battle lines, however, are forming over licensing practices rather than over price. Users are challenging licensing policies as a way to reduce software cost. The argument focuses on which metric to use when you calculate the price. The leading metrics are topology, the specific CPU; resource, the number of connected devices or connect time; use instance, the number of log-ons or transactions in a given period; and user (see story at right).

The Open Users Recommended Solutions Consortium has been tackling this issue through its Software Licensing Taskforce and has developed a complex methodology for calculating software value. But users and vendors are developing a more practical approach.

"We ask the customer what problem they're trying to make go away," says Darrell Ackmann, chairman of the Software Licensing Taskforce and director of business practices at Software AG of North America, Inc. From there, Ackmann and the customer negotiate a solution at a reasonable price. Even if customers haven't worked out a complete return-on-investment analysis, "people have a ballpark idea of how much a solution is worth to them," he says.

Bargaining table tips

"When we start a negotiation, I know what I'm willing to pay. I know what the value is to us, and I know what options I have," Browning says.

There are four primary negotiable components to the software's price: the pricing metric, the license period, the base price and the discount. The key to gaining an advantage is to establish the most appropriate metric, usually user-based pricing, and to know your usage of the product.

"If you understand your usage and can correlate cost with usage, you'll negotiate better discounts," says Mike Schelp, principal at Ventana Consulting in Cupertino, Calif.

Even if you're not a great negotiator, competition is forcing software vendors to be more flexible. Software, which had long been a seller's market, is quickly becoming a buyer's market, vendors and users say. ■

Radding is a free-lance writer in Newton, Mass.

Where the give is

Vendors are most flexible in the following areas of client/server software pricing:

Volume discounts	93%
Payment terms	89%
Training	76%
Price protection	67%
Support/Maintenance	67%
Warranty	56%
Initial support	52%

Base: 52 software vendors
Multiple responses allowed

Source: Culpepper & Associates, Inc., Atlanta

Topology vs. user-based pricing

Topology metrics continue to dominate how client/server software prices are calculated: 63% of 52 software vendors use this, followed by user metrics (29%), according to Culpepper and Associates, Inc. in Atlanta.

Users charge that such metrics result in unfair situations. "We're proponents of user-based pricing, but I'm not sure we're better off [from a price standpoint] in every case because of it." In cases where software is used lightly by many users, a CPU-based price might be cheaper.

But what's a user? Thirty-four percent of the survey respondents used concurrent signed-on users as the definition for user-based pricing, followed by seats (31%), authorized users (14%), other (10%) and active users (9%). These, however, do not necessarily reflect user preferences. Authorized user-based licensing, for example, creates "goofy situations" where a new user can't log on to an application even though no named users are using it, says Dan Metzger, vice president at Lawson Software.

—Alan Radding

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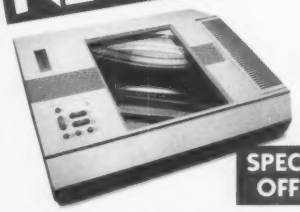

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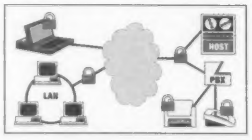

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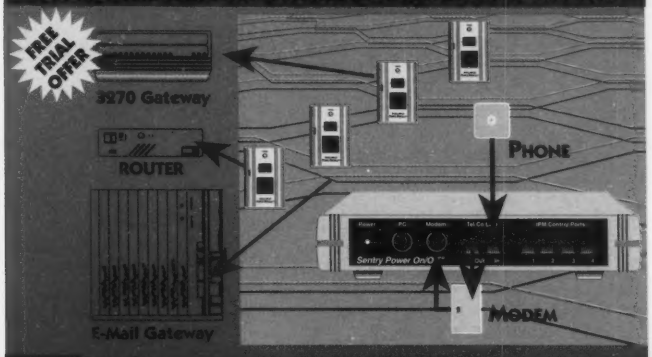

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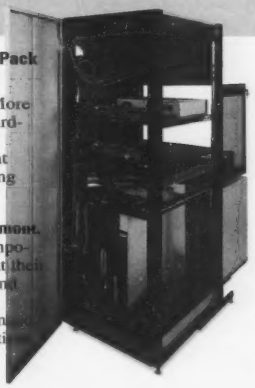

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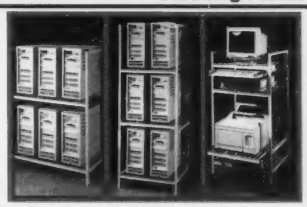

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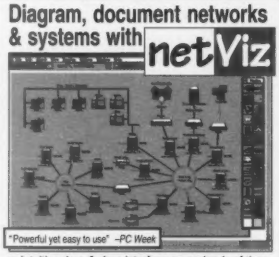

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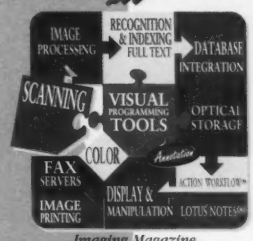

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Oct. 28 Stock Ticker

Gainers

Percent

Zeos International Ltd.	37.3	VMark Software Inc.	-25.3
Software Publishing Corp.	25.0	Creative Technologies Inc.	-22.4
Racotek Inc.	25.0	Compuware Corp.	-17.0
Cambridge Tech. Partners	23.8	IPL Systems Inc.	-14.1
CrossComm	23.4	Easel Corp.	-13.2
Netrix Corp.	23.3	Computervision Corp.	-12.5
Peoplesoft	18.8	Cray Research Inc.	-12.4
Quarterdeck Office Sys.	18.2	Walker Interactive Systems	-11.8

Dollar

Peoplesoft	10.25	Compuware Corp.	-8.00
Chipcom Corp.	7.75	Xerox Corp.	-7.38
Stratacom Inc. (H)	6.00	VMark Software Inc.	-5.13
Texas Instruments	5.00	Creative Technologies Inc.	-4.00
IMRS	4.50	Sprint Corp.	-3.13
Powersoft	4.38	Cray Research Inc.	-2.63
Micron Technology	4.25	Harris Corp.	-1.63
Analog Devices Inc.	4.25	Komag Inc.	-1.50

Disappointing sales growth and trimmed projections for 1995 contributed to Xerox Corp.'s loss this week. Semiconductors, meanwhile, were among the highest performers.

Not a kernel for concern

Investors brave enough to tackle the complex and confusing internetworking market should soon take note of TCP/IP provider FTP Software, Inc. (FTPS).

Maria Lewis, an analyst at Cowen & Co. in Boston, rates FTP a strong Buy, despite investors' concerns that the introduction of **Microsoft Corp.**'s Windows 95, with its TCP/IP kernel included, will threaten FTP's industry lead. Windows 95 is the next generation of Windows.

"Some investors are afraid that Microsoft's kernel won't leave enough market space for FTP," Lewis said. "But Microsoft won't be providing any of the applications that are usually bundled with a kernel, so that shouldn't be a real concern."

Richard Villars, an analyst at International Data Corp. in Framingham, Mass., said FTP will, in fact, be well positioned to take advantage of Microsoft's inclusion of the networking protocol. "Microsoft is including the TCP/IP kernel because it wants to populate Windows 95, but it's not so interested in supporting the third-party applications or integration services that will go on top of it," Villars said.

FTP, on the other hand, has a strong reputation for support, training and education, he said. "Microsoft's move is good for FTP because it means more people will need support for TCP/IP. Right now, it's being used in only about 6% of the PCs in the market."

A more daunting challenge for FTP might come from investors who are uncomfortable with internetworking technology, Lewis said. "Investors looking at the networking industry today are confronted with analyzing a great deal of technology change. The complexity can really give them pause," she said.

Joe Payne, an analyst at Wheat First Butcher & Singer in Richmond, Va., added that it might be too soon to tell whether users will abandon their enterprise systems for newer internetworking schemes. "It isn't yet proven that corporations are going to replace their hierarchical networks with internetworking," Payne said.

But FTP's ability to meet demand for TCP/IP support in Internet networks and offer a wider variety of platforms than competitors such as **NetManage (NETM)**, places the company well in the lead, Villars said. Add the need for TCP/IP in tools other than computers and you see how broad a market FTP has. "You'll find TCP/IP in machine tools like X-ray systems, but you won't see Microsoft there," he said.

— Erin Callaway

Exch	52-Week Range			Oct. 28 Wk Net 3 PM Change	Wk Pct Change
Communications and Network Services					**UP 3.87%**
OTC	43.00	15.00	3 COM Corp. (H)	41.50	-0.88	-2.1
NYS	43.38	36.25	AMERITECH Corp.	40.38	1.25	3.2
NYS	58.38	49.50	AT&T	54.38	0.13	0.2
OTC	26.50	12.75	Banyan Systems Inc.	17.75	0.00	0.0
OTC	43.88	18.63	Bay Networks Inc.	25.00	0.38	1.5
NYS	64.50	49.00	Bell Atlantic Corp.	52.13	0.88	1.7
NYS	63.50	51.25	Bellsouth Corp. (L)	52.38	-0.88	-1.6
NYS	21.50	10.00	Bolt, Beranek & Newman	16.75	0.13	0.8
OTC	15.75	9.00	Brooktrout Technology	10.00	0.50	5.3
NYS	53.00	33.06	Cabletron Systems	49.88	2.75	5.8
OTC	43.00	10.00	Centigram Communications	18.50	0.63	3.5
OTC	60.25	31.50	Chipcom Corp.	59.75	7.75	14.9
OTC	40.75	18.75	Cisco Systems Inc.	30.13	2.81	10.3
OTC	18.38	7.88	Compression Labs Inc.	8.75	0.25	2.9
OTC	12.38	5.13	Computer Network Tech.	6.75	0.25	3.8
OTC	33.75	7.50	CrossComm	9.56	1.81	23.4
OTC	3.00	1.50	Data Switch Corp.	2.50	0.13	5.3
OTC	35.19	17.88	DSC Communications	30.81	1.94	6.7
NYS	32.50	8.25	General Datacomm Inds.	32.25	1.63	5.3
NYS	39.63	29.50	GTE Corp.	30.88	0.75	2.5
NYS	95.97	78.63	ITT Corp.	88.75	3.25	3.8
OTC	29.13	21.38	MCI Commmunications Corp.	22.50	-0.50	-2.2
OTC	8.38	2.63	Microcom Inc.	8.25	0.63	8.2
OTC	28.00	11.25	NetManage Inc.	27.63	1.38	5.2
OTC	7.25	4.00	Netrix Corp.	6.63	1.25	23.3
OTC	8.75	3.25	Network Computing Devices	3.75	-0.50	-11.8
NYS	21.13	7.38	Network Equipment Tech. (H)	21.13	2.38	12.7
OTC	23.38	12.50	Network General	19.88	0.75	3.9
OTC	9.63	6.38	Network Systems Corp.	7.06	0.06	0.9
NYS	68.75	26.50	Newbridge Networks Corp.	29.38	-0.88	-2.9
NYS	37.75	26.00	Northern Telecom Ltd.	35.88	0.63	1.8
OTC	26.63	13.38	Novell Inc.	17.38	1.25	7.8
NYS	43.75	33.25	Nynex Corp.	39.00	0.50	1.3
OTC	30.00	15.50	Octel Communications Corp.	21.25	0.38	1.8
OTC	20.75	10.00	Optical Data Systems Inc. (H)	19.00	-1.00	-5.0
OTC	7.50	2.88	Penril Data Comm Networks (L)	3.00	-0.38	-11.1
OTC	20.75	10.00	Picturetel Corp.	19.00	2.00	11.8
OTC	8.25	2.13	Proteon Inc.	6.75	0.50	8.0
OTC	14.38	2.75	Racotek Inc.	4.38	0.88	25.0
NYS	23.25	12.44	Scientific Atlanta Inc. (H)	21.88	-0.50	-2.2
NYS	45.25	36.75	Southwestern Bell Corp.	41.13	0.38	0.9
NYS	40.13	31.38	Sprint Corp.	32.63	-3.13	-8.7
OTC	26.75	13.38	Standard Microsystems Corp.	23.25	0.63	2.8
OTC	58.25	13.00	Stratacom Inc. (H)	58.25	6.00	11.5
OTC	15.25	3.88	Telebit Corp.	4.88	0.00	0.0
OTC	46.00	23.00	US Robotics	38.13	2.88	8.2
NYS	50.75	35.63	US West Inc. (L)	37.75	0.38	1.0
OTC	28.25	12.75	Xircom	17.50	-0.63	-3.4
OTC	29.00	13.25	Xylogics Inc.	29.00	2.13	7.9
OTC	28.13	11.25	Xyplex Inc.	27.75	0.00	0.0
PCs and Workstations					**UP 5.52%**
OTC	7.50	3.00	Advanced Logic Research	4.25	0.00	0.0
OTC	43.13	24.63	Apple Computer Inc. (H)	42.50	0.13	0.3
OTC	33.00	10.38	AST Research Inc.	12.63	0.88	7.4
NYS	40.38	21.13	Compaq Computer Corp.	40.38	2.38	6.3
OTC	43.50	19.13	Dell Computer Corp.	43.31	1.69	4.1
OTC	25.00	9.25	Gateway 2000 Inc.	22.88	0.63	2.8
NYS	96.88	70.13	Hewlett Packard Co. (H)	96.88	3.88	4.2
NYS	30.50	18.75	Silicon Graphics (H)	30.50	1.50	5.2
OTC	33.50	18.25	Sun Microsystems Inc. (H)	33.50	1.06	3.3
NYS	50.75	30.75	Tandy Corp.	43.88	0.00	0.0
OTC	6.00	2.38	Zeos International Ltd.	5.25	1.13	27.3
Large Systems					**OFF 1.45%**
ASE	10.38	4.44	Amdahl Corp.	10.38	0.63	6.4
NYS	8.88	4.38	Convex Computer (H)	7.75	-0.25	-3.1
OTC	3.13	0.50	Cray Computer	1.25	0.00	0.0
NYS	33.75	18.50	Cray Research Inc.	18.50	-2.63	-12.4
NYS	11.00	6.63	Data General Corp.	9.63	-0.88	-8.3
NYS	38.63	18.25	Digital Equipment Corp.	31.13	-0.63	-0.6
OTC	6.38	2.38	Encore Computer Corp.	4.00	-0.13	-3.0
NYS	51.75	40.97	Harris Corp.	42.75	-1.63	-3.7
NYS	76.13	45.75	IBM (H)	75.63	0.75	1.0
OTC	18.75	7.75	NetFrame	8.13	0.50	5.8
OTC	21.00	3.88	Parallan Computer	4.75	-0.13	-2.6
OTC	16.50	5.38	Pyramid Technology	10.38	0.50	5.1
OTC	20.00	11.13	Sequent Computer Sys.	19.00	1.13	6.3
OTC	6.84	3.25	Sequoia Systems Inc.	3.69	-0.44	-10.6
NYS	38.63	22.88	Stratus Computer Inc.	36.13	-0.88	-2.5
NYS	19.13	10.00	Tandem Computers Inc. (H)	17.88	-0.88	-4.7
OTC	30.00	3.88	TriCord Systems	6.38	0.50	8.5
NYS	16.50	8.63	Unisys Corp.	10.38	-0.13	-1.2
Software					**UP 2.33%**
OTC	38.50	19.00	Adobe Systems Inc.	35.75	-0.25	-0.7
OTC	8.13	4.38	American Software Inc.	4.88	0.00	0.0
OTC	15.75	6.75	Ask Computer Systems	13.13	0.00	0.0
OTC	70.00	37.00	Autodesk Inc.	68.50	1.25	1.9
OTC	3.88	1.75	Bachman Info. Systems	3.00	-0.25	-7.7
OTC	28.25	20.50	BGS Systems Inc.	22.25	0.00	0.0
OTC	71.00	40.50	BMC Software Inc.	45.25	0.50	1.1
OTC	32.00	22.50	Boole & Babbage (H)	31.50	0.00	0.0
OTC	18.25	8.50	Borland Int'l. Inc.	10.38	0.63	6.4
OTC	25.00	6.75	Brock Control Systems Inc.	10.25	-0.75	-6.8
OTC	4.00	2.38	CE Software	3.09	0.28	10.0
ASE	30.34	6.25	Cheyenne Software Inc.	10.88	0.81	7.4
OTC	16.13	8.50	Cognos Inc.	15.50	-0.22	-1.4
NYS	50.88	27.38	Computer Associates (H)	49.50	-0.38	-0.8
NYS	5.38	2.50	Computervision Corp.	3.50	-0.50	-12.5
OTC	49.25	22.75	Compuware Corp.	39.00	-8.00	-17.0
OTC	14.00	9.00	Comshare Inc.	13.38	1.50	12.6
OTC	16.66	9.91	Corel Corp.	15.81	1.31	9.1
OTC	6.75	2.88	Easel Corp.	2.88	-0.44	-13.2
OTC	29.25	14.25	Filenet Corp.	25.25	0.75	3.1
OTC	25.00	3.00	4th Dimension	6.88	0.00	0.0
OTC	18.00	8.13	Frame Technology	15.13	-0.88	-5.2
OTC	31.25	11.50	FTP Software Inc.	25.13	1.88	8.1
OTC	11.00	7.00	Group I Software	9.13	0.13	1.4
OTC	31.75	6.75	Gupta	11.81	-0.81	-6.4
OTC	11.50	5.13	Hogan Systems Inc. (L)	6.38	0.13	2.0
OTC	39.25	18.00	IMRS	39.25	4.50	12.9
OTC	39.75	11.25	Information Resources	14.38	0.88	6.5
OTC	28.75	14.25	Informix Corp. (H)	27.13	0.69	2.6
OTC	11.25	7.75	Intergraph Corp.	8.56	0.31	3.8
OTC	8.75	2.50	Interleaf Inc.	3.88	0.00	0.0
OTC	17.50	7.75	Intersolv Inc.	17.38	1.63	10.3
OTC	73.25	27.00	Intuit Inc.	68.88	0.50	0.7
OTC	18.75	2.25	Knowledgeware Inc.	3.88	0.13	3.3
OTC	34.75	19.00	Legent Corp.	29.25	0.75	2.6
OTC	86.50	29.75	Lotus Development	39.31	1.44	3.8
OTC	17.75	6.00	Magic Software Enterprises	6.25	-0.50	-7.4
OTC	15.75	6.00	Manugistics Group Inc.	8.00	0.94	13.3
OTC	7.50	1.44	MathSoft	3.13	-0.25	-7.4
OTC	15.25	5.50	McAfee Associates	15.25	1.44	10.4
OTC	17.25	9.38	Mentor Graphics	13.38	1.88	16.3
OTC	23.38	11.50	Micro Focus	14.88	0.75	5.3
OTC	11.63	4.63	Micrografx Inc.	5.31	-0.06	-1.2
OTC	62.13	38.00	Microsoft Corp. (H)	62.13	2.63	4.4
OTC	46.50	26.25	Oracle Corp.	45.44	0.69	1.5
OTC	42.50	21.50	Parametric Technology	36.00	1.50	4.3
OTC	24.50	13.38	ParcPlace Systems Inc.	21.50	2.75	14.7
OTC	64.75	26.00	Peoplesoft	64.75	10.25	18.8
OTC	7.44	3.50	Phoenix Technologies (H)	7.44	0.75	11.2
OTC	69.50	31.50	Powersoft	63.00	4.38	7.5
OTC	29.75	3.50	Platinum Software	13.13	-0.38	-2.8
OTC	23.75	8.50	Platinum Technology	22.88	0.63	2.8
OTC	56.75	27.00	Progress Software Corp.	30.38	-0.13	-0.4
OTC	4.13	1.94	Quarterdeck Office Sys.	2.44	0.38	18.2
OTC	25.00	9.50	Rainbow Technologies Inc.	16.38	1.13	7.4
OTC	9.25	3.00	Rasterops	3.88	-0.50	-11.4
OTC	8.75	2.88	Ross Systems	4.00	-0.31	-7.2
OTC	28.63	2.75	Sapiens Intl. Corp. N.V.	3.13	-0.13	-3.8
OTC	18.38	9.75	Softkey International Inc. (H)	18.38	1.75	10.5
OTC	8.63	3.00	Software Publishing Corp.	5.63	1.13	25.0
OTC	10.00	5.00	State of the Art	6.94	-0.19	-2.6
NYS	35.63	25.00	Sterling Software Inc.	31.00	0.88	2.9
OTC	19.88	3.63	Struct. Dynamics Research	4.75	0.00	0.0
OTC	57.00	32.38	Sybase Inc.	52.75	3.63	7.4
OTC	20.25	9.88	Symantec Corp.	18.00	2.44	15.7
OTC	52.75	33.00	SynOpsys	47.75	3.38	7.6
OTC	18.00	10.63	System Software Assoc.	12.13	0.00	0.0
OTC	6.75	3.25	Trinzic Corp.	4.38	-0.38	-7.9
OTC	30.00	11.75	ViewLogic Systems	22.25	1.25	6.0
OTC	23.25	12.00	VMark Software Inc.	15.13	-5.13	-25.3
OTC	13.25	6.25	Walker Interactive Systems	7.50	-1.00	-11.8
OTC	60.00	29.25	Wall Data Inc.	36.25	2.00	5.8
Semiconductors					**UP 4.88%**
NYS	31.75	16.75	Advanced Micro Devices	26.63	3.25	13.9
NYS	36.25	19.38	Analog Devices Inc.	36.25	4.25	13.3
OTC	36.13	11.81	Atmel Corp. (H)	36.13	3.00	9.1
OTC	7.50	3.63	Chips and Technologies	5.75	0.00	0.0
OTC	44.63	24.88	Cirrus Logic	29.50	-1.25	-4.1
NYS	20.50	11.25	Cypress Semiconductor Corp.	19.88	1.63	8.9
NYS	20.13	13.00	Dallas Semiconductor	14.13	0.50	3.7
OTC	29.25	14.75	Integrated Silicon Systems	24.75	0.75	3.1
OTC	73.50	55.88	Intel Corp.	62.00	1.50	2.5
NYS	41.38	13.00	LSI Logic Corp.	41.38	1.75	4.4
OTC	20.13	12.25	Lattice Semiconductor	17.25	0.31	1.8
NYS	44.88	15.16	Micron Technology	39.75	4.25	12.0
NYS	57.88	42.13	Motorola Inc. (H)	57.88	1.88	3.3
NYS	25.00	14.38	National Semiconductor	17.25	1.88	12.2
OTC	16.25	6.75	Sierra Semiconductor (H)	16.13	0.75	4.9
NYS	89.50	55.75	Texas Instruments	75.00	5.00	7.1
OTC	16.38	9.38	VLSI Technology	12.19	-0.19	-1.5
OTC	11.63	2.88	Weitek	3.75	-0.25	-6.3
ASE	20.38	7.38	Western Digital Corp.	16.88	1.00	6.3
OTC	59.75	19.00	Xilinx	59.75	3.38	6.0
OTC	40.00	26.50	Zilog Inc.	29.00	0.50	1.8
Peripherals and Subsystems					**UP 0.27%**
OTC	30.50	14.50	American Power Conversion	18.13	0.88	5.1
OTC	27.25	18.25	Banctec Inc. (L)	20.50	0.50	2.5
OTC	6.25	3.25	Cambex Corp.	4.25	0.25	6.3
ASE	6.00	1.88	Cognitronics Corp.	2.13	0.00	0.0
NYS	20.50	10.25	Conner Peripherals	11.75	0.13	1.1
OTC	24.00	9.75	Creative Technologies Inc.	13.88	-4.00	-22.4
OTC	14.00	3.50	Data Race Inc.	5.25	0.50	10.5
ASE	10.75	4.13	Dataram Corp.	4.94	-0.06	-1.3
NYS	23.00	12.38	EMC Corp.	21.38	0.63	3.0
OTC	11.50	3.13	Emulex Corp. (H)	11.00	0.50	4.8
OTC	21.00	11.50	Evans & Sutherland (L)	11.50	-0.75	-6.1
OTC	23.31	14.00	Exabyte	22.13	-0.13	-0.6
OTC	28.50	2.63	Intelligent Info. Systems	3.25	-0.13	-3.7
OTC	4.50	2.00	Iomega Corp.	4.50	-0.63	-16.1
OTC	9.75	3.00	IPL Systems Inc.	3.44	-0.56	-14.1
OTC	28.88	14.75	Komag Inc.	25.00	-1.50	-5.7
OTC	8.63	2.63	Maxtor Corp. (L)	3.50	0.13	3.7
OTC	8.75	4.88	Micropolis Corp.	8.63	0.25	3.0
OTC	22.50	10.25	Pinnacle Micro Inc.	15.00	0.00	0.0
OTC	23.00	6.50	Printronix Inc.	22.00	1.50	7.3
NYS	11.75	6.88	QMS Inc.	9.63	0.38	4.1
OTC	20.25	11.63	Quantum Corp.	15.50	0.63	4.2
OTC	18.25	7.38	Radius Inc.	9.56	0.94	10.9
NYS	17.00	6.38	Recognition International	7.50	0.13	1.6
OTC	6.88	3.88	Rexon Inc.	5.00	-0.38	-7.0
OTC	28.75	18.63	Seagate Technology	25.44	0.81	3.3
NYS	41.50	25.00	Storage Technology	28.00	-0.38	-1.3
NYS	40.50	21.38	Tektronix Inc. (H)	39.25	0.13	0.3
NYS	112.75	78.38	Xerox Corp.	104.50	-7.38	-6.6
Services					**UP 2.83%**
OTC	27.25	17.50	American Mgmt. Systems	24.25	-1.25	-4.9
NYS	4.25	2.50	Anacomp Inc.	2.75	0.00	0.0
OTC	20.50	14.50	Analysts Int'l	19.75	0.00	0.0
NYS	58.13	47.63	Auto Data Processing (H)	57.50	0.38	0.7
OTC	19.50	14.00	Cambridge Tech. Partners	19.50	3.75	23.8
NYS	27.50	17.50	Ceridian Corp.	26.13	0.00	0.0
NYS	24.25	17.25	Comdisco Inc.	20.38	0.50	2.5
OTC	14.50	6.50	Computer Horizons	14.50	1.75	13.7
NYS	46.00	30.34	Computer Sciences	46.00	2.13	4.8
NYS	10.38	6.50	Computer Task Group	8.25	-0.50	-5.7
NYS	28.63	6.75	CompUSA Inc.	11.88	1.13	10.5
OTC	11.38	5.50	Control Data Systems Inc. (L)	6.50	0.25	4.0
OTC	11.00	6.13	Egghead Discount Software	8.63	0.63	7.8
NYS	38.50	26.50	General Motors E (EDS)	36.63	0.50	1.4
NYS	21.00	7.25	Inacom Corp.	8.75	-0.13	-1.4
OTC	28.00	13.63	Intelligent Electronics	15.38	-0.31	-2.0
OTC	22.50	7.00	Merisel	9.38	-0.25	-2.6
OTC	32.50	9.25	Microage Inc.	12.00	0.38	3.2
OTC	40.50	28.50	Paychex	37.75	0.75	2.0
NYS	46.00	22.25	Policy Management Sys.	46.00	2.50	5.7
NYS	28.25	19.56	Reynolds and Reynolds	24.75	-0.50	-2.0
OTC	28.50	17.00	SEI Corp.	21.00	1.25	6.3
OTC	30.50	21.50	Shared Medical Systems	30.50	2.13	7.5
OTC	10.13	4.88	SHL Systemhouse	5.19	-0.06	-1.2
OTC	24.00	9.25	Software Spectrum Inc.	12.25	-0.25	-2.0
OTC	41.75	31.50	Sungard Data Systems	38.50	0.50	1.3

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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THEY KEEP GOING ON AND ON ABOUT HOW WE KEEP GOING ON AND ON.

Dell Latitude?

Dell's Latitude series of laptops is breaking battery life records. Faster processors and color [illegible] have tend[illegible]

can't prove [illegible] those claims. All we can say is that we used the notebook for four solid hours and still had more than 25% of the charge left, according to Dell's Windows utility that measures the battery charge. We haven't yet had enough time to drain the battery in one sitting. That says much for the efficiency of lithium-ion technology.

Laptop Buyers Guide
Vol. 12, No. 9, p. 26, p. 86

Well, listen up, you beleaguered notebook nomads: I have found the Holy Grail. It's a full-featured, high-powered, name-brand notebook PC that really gets six hours of battery life and maybe more, depending on your usage pattern. It isn't [illegible] the most [illegible]

[illegible] ON. Of the two, the Dell Latitude XP stands out, in my view, and not only because of its awesome battery life, made possible by a new lithium-ion battery technology and especially clever hardware and software that micromanages the machine's use of power.

Walter Mossberg
Wall Street Journal, 9-8-94

the road. The latest in the Latitude line—the XP—is more like a BMW. It's a hot model just off the showroom floor that's bound to draw some oohs and ahhs for its style and performance.

[illegible] With the recent arrival of [illegible]

Windows Magazine
10-94, p. 124

Longest Battery Life Ever: Dell Computer's new Latitude XP notebooks are a workaholic's dream. A preproduction DX2-50 model with a 9.5-inch active-matrix display and power management enabled ran for an astounding 7 hours, according to rundown tests by the PC World Test Center. Add to that config[illegible]

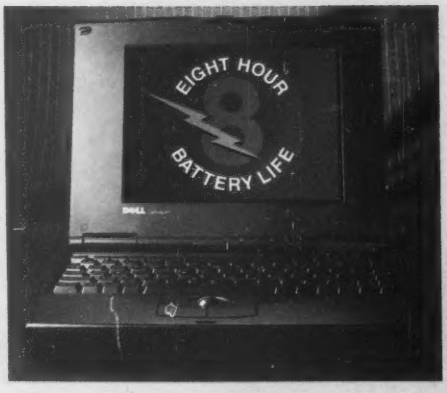
PC World, 10-94, p. 64

extended [illegible] weight, and for these guys, compromise isn't an option.

Enter Dell's Latitude XP, the fastest, longest-lasting 486 notebook our lab has ever seen. Powered by Intel's DX4/100 processor and equipped with state-of-the-art lithium ion batteries and up to 36MB of RAM and 500MB of disk space, it rivals most desktop machines.

Extra Life All that power would be beside the point if the system could run for only a couple of hours. You're guaranteed not to have that problem with this machine. While [illegible]

PC Computing
10-94, p. 57



When we introduced our Latitude™ XP notebook, we knew its eight-hour battery life[Δ] would evoke quite a few comments from the industry experts. However, recently they have been having field days at their keyboards.

Perhaps all of this hullabaloo is due to the Latitude XP notebook's workhorse Lithium Ion battery. Or perhaps it's due to the miserly power-conservation software, which intelligently adjusts energy consumption. A unique feature that helps this already powerful battery perform even more efficiently.

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- New Smart Lithium Ion Battery
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- 30-day Money-back Guarantee[†]

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IntelDX4™ 100MHz System
Business Lease: $173/Mo.

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- 8MB RAM (36MB Max RAM)
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- New Smart Lithium Ion Battery
- 3-year Limited Warranty
- 30-day Money-back Guarantee

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([Δ]Actual battery life will vary depending on nature and frequency of use and configuration.)

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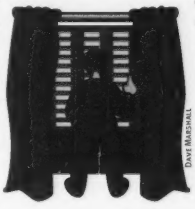
Democracy

CONTINUED FROM COVER 1

tion, which has heavily advocated the information superhighway as a tool for transforming citizen access to government.

Clinton's 1992 presidential campaign was notable for making his E-mail address public, and the White House recently established its own World-Wide Web Home Page (whitehouse.gov).

Following the president's lead, mainstream politicians elsewhere are rapidly embracing the Internet.


DAVE MARSHALL

Earlier this month, the California Voter Foundation, a nonprofit organization in Sacramento, launched the California Online Voter Guide. This Gopher site is maintained by Pacific Bell and contains biographies, position papers, press releases and E-mail addresses solicited from candidates for statewide office.

"Over 90% of the major party candidates — 16 out of 18 — responded," said executive director Kim Alexander.

Partial solution

Despite the enthusiasm, on-line systems for the electorate raise some issues. For one thing, Internet access is far from universal. So these systems must be viewed as "an addition, not a substitute" for conventional means of working with government, Cain said.

The League of Women Voters has placed its VOICE project terminals in public libraries. Likewise, the California Voter Foundation is installing 177 terminals in libraries and providing access to 19 schools so students can learn about the electoral process.

Cain also said citizens will need help navigating and acting on the data they gather on-line: "So I'm located next to a nuclear waste site. What do I do now?"

The on-line political traffic has almost become the kind of electronic town meeting that former presidential candidate Ross Perot talked about.

In Minnesota, for instance, statewide candidates are engaging in a real-time E-mail debate sponsored by the Minnesota Electronic Democracy Project. The public can monitor and comment on the proceedings via an Internet "town hall."

But the fairness of the electronic meeting's format is another concern because it can be difficult to ensure that the educational information is unbiased or that the process allows true debate, according to a 1993 report by the Aspen Institute, a think tank in Queenstown, Md.

Scott L. Althaus, a political scientist at Northwestern University in Evanston, Ill., said his own experience with the Internet's Usenet newsgroups does not reveal the ideal of a classless, open and democratic exchange.

"There's a lot of hostility in the discourse," he said. Nonetheless, there is great potential for using the medium for deliberative democracy "where citizens get together to discuss things," he said.

Tim Hodson, executive director at the Center for California Studies at California State University in Sacramento, said he is unsure of the impact of making poll data available on election night. "It's akin to services that get you updated baseball scores," he said. Far more interesting, he said, are systems that make it possible for a citizen to check the latest draft of a bill or monitor how his state senator voted on a piece of legislation.

Alexander said the electronic medium could be an answer to the thorny issue of campaign finance reform. An electronic medium can begin to address the inequities inherent in political campaign spending, where only candidates with millions to spend on direct mail and TV have a realistic shot at office, she said.

Alexander and others also said on-line access may help address voter apathy, especially among younger voters.

Key targets of Alexander's project are 18- to 29-year-olds because voter turnout has dropped 50% in 12 years among that segment of the population. Because younger people also have a greater affinity for computers, "we can now reach a large segment of nonvoters simply by approaching them in a medium they use and understand," Alexander said.

Overall, much of the on-line electoral activity remains in California where experts estimate more than 1 million people use the Internet.

Address book

The following are Internet addresses for various election-related servers:*

- **The state of California's system, with real-time vote tabulations from the Nov. 8 elections. Address: http://www.election.digital.com or http://www.election.ca.gov.**
- **Voter Online Information and Communications Exchange, with local, state and national candidate profiles. Address: http://www.oclc.org/votesmart/lwv/lwvhomex.htm.**
- **The Minnesota Electronic Democracy Project holds on-line debates among the gubenatorial and U.S. Senate candidates. Address: e-democracy@free-net.mpls-stpaul.mn.us.**
- ***The San Francisco Examiner*'s Web site for Bay Area candidates, with text files, photos, graphics and short audio/visual clips. Address: http://sfgate.com/examiner.**
- **The Right Side of the Web features commentary from the likes of Rush Limbaugh. Address: http://www/clark.net/pub/jeffd/index.html.**
- **The California Voter Foundation's Online Voter Guide, with information from candidates in the nine statewide races. Address: http://www.ai.mit.edu/projects/ppp/home.html.**

— *Compiled by Mitch Betts and Ellis Booker*

**** Many sites have launched Gopher as well as World-Wide Web servers. This list shows only the Web addresses.***

GE guides customers to the Internet. See page 61.

Xerox

CONTINUED FROM COVER 1

proposals for customers.

The portables come equipped with Microsoft Corp.'s PowerPoint, Excel and Word applications, as well as fax/modem software and access software. The Windows environment is new for Xerox, which is moving away from the STAR environment it invented years ago but never successfully pushed outside its own user base.

Interviews with 13 Xerox sales staffers in the district found them overwhelmingly in favor of the virtual office concept and the increase in automation — despite initial fears that they would lose access to other team members and end up isolated.

The pagers they received with their notebooks quelled those fears, the reps said, and they keep in touch via voice mail and meetings at local restaurants.

Prior to receiving the notebook systems, the representatives had to go to the district office to access the network and other computers equipped with software for presentations, document preparation and proposal creation. Because they did not have their own terminals, the reps frequently had to wait to use these programs.

The initial 2,000-unit phase of the notebook rollout will take a hiatus in mid-November to avoid interfering with the crucial end-of-year selling season. Xerox will automate the rest of its sales force next year, company officials said.

Right place, right time

A twist of geographic fate put the New England district at the forefront of Xerox's virtual office project.

In September, the office moved and cut its office space in half, to 30,000 sq. ft. About half its staff has official space in the new offices. But the virtual workers can now log on to a system when they come into the office to reserve space in conference areas, cubicles and hard-walled offices.

"We didn't do this just because of real-estate costs. We did this because of our technology sales," said Cathy Lewis, district sales manager for New England North. "We don't just sell copiers. We do network consulting. We sell services across networks, etc., and I'm finding that very few of our customers actually know that."

MICHAEL FITZGERALD

Xerox's Cathy Lewis: *Virtual offices do not mean more time at home*

And that is an issue, as Xerox wants to use technology to sell its technology.

"How can we have credibility with our customers if we aren't showcasing and utilizing network and PC capability for our own documents?" said Joseph Valenti, vice president and general manager of Xerox's office of new productivity, which was responsible for the U.S. field re-engineering effort.

Easy access to the corporate network is the main reason team members in Waltham said they like the notebooks. They also cited improved efficiency and productivity in everything from filing a monthly forecast to the all-important turnaround of proposals for customers.

Most of the sales reps spend less time sitting in traffic than they did, and some rarely come in to the office now.

The downside of working in a virtual office revolves around human issues, such as learning electronic- and voice-mail etiquette, coming up the technology curve and working too much, they said.

Virtual trade-off

Participating in a virtual office setup might mean you get to spend more time at home, but it also might mean working more.

"I'm still waiting to see the benefit of it," said Jeanne Hammond, who is married to 18-year Xerox systems sales manager Brian Hammond. He acknowledged that in the two months since he got his notebook computer setup, he has been working more.

"I'll dial in to pick up my messages in the evening, and an hour or two goes by," Mr. Hammond confessed. He said he hopes after the fall crunch ends and the newness of having the technology wears off, his work hours will return to normal.

But couples with young children were particularly positive.

"I used to have to spend a lot of my evenings in [the office] to get access to the network. Now I can be home and do it after I put [my baby] to bed," said Paulette Duffett, a Xerox saleswoman.

INDUSTRY PULSE: High-speed networking

The need for speed

Top applications driving end-user needs for more bandwidth

- Data-intensive applications
- Imaging
- Multimedia

Top end-user requirements

- High speed built into standard product offerings
- Comparable pricing to traditional, lower-speed network products

Top factors influencing brand selections

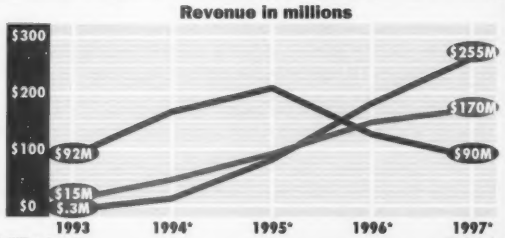
- Standards compliance
- Vendor reputation
- Price
- Interoperability

Survey base: 200 systems integration, network integration, VAR, consulting and distribution companies

Source: *Dynamics in the High-Speed Network Market*, ParaTechnology, Inc., Bellevue, Wash.

Worldwide adapter card market

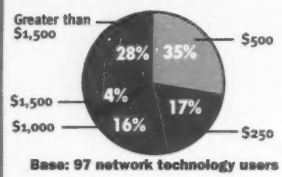
FDDI will be a good interim technology until Asynchronous Transfer Mode (ATM) costs come down



Source: The Information Network, Williamsburg, Va.

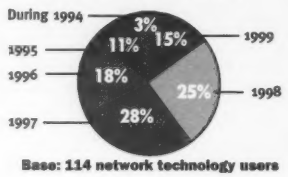
Deciding on ATM

At what cost per connection will you consider installing ATM?



Base: 97 network technology users

When do you estimate that your network will be heavily based on ATM?



Base: 114 network technology users

Source: Advantage Business Research, Inc., Lake Success, N.Y.

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Inside Lines

Truth in advertising

Oracle had to halt certain newspaper ads running in the UK after a government advertising watchdog group tipped off by Sybase UK deemed them "misleading." At issue was Oracle's "Gentleman, start your snails" ad, which implied that Oracle beat Sybase and others in database benchmarks run by *PC Magazine*. The ad shows numbers for Oracle 7 running on Novell's NetWare but urges readers to buy a different product: Oracle 7 for Microsoft Windows NT. It is revising the ad to include a more recent *PC Magazine* score "that's even better," an Oracle spokesman said. "So we're investigating new slothlike creatures . . . to represent Sybase's product."

PowerBuilder pumps itself up

Powersoft next week will announce Version 4.0 of its PowerBuilder software development tools. Industry sources said the vendor delayed release of the new version, expected by year's end, to stabilize the product. Expected in this release are beefy new features such as links to major transaction processing monitors and support for non-Windows platforms and team development.

Sweating to the alphas

IBM is sweating hard these days to scrape together enough reliable code to show off an alpha version of OS/2 for PowerPC at Comdex. The company is also rounding up enough OS/2 developers to persuade them to do a quick port of their applications to be trotted out at the show. According to one source, if a presentable alpha version is not ready for the show, "heads will roll."

On fire and over the wire

Users waiting for faster interfaces to shuttle multimedia data from peripherals to CPUs will take heart from an upcoming announcement from Sony. Sources inside the proposed standard 1394 Trade Association said the consumer electronics giant plans a Comdex announcement of a camcorder that incorporates a 1394 interface known at Apple as FireWire. It provides an average tenfold speed increase over SCSI and integrated drive electronics interfaces.

Developing for dollars

SAP America R/3 client/server development skills are apparently still in short supply, and the corporate raiding is getting ugly. An IS chief at one SAP customer site last week reported that IBM recently snatched away three or four of his R/3 people. One R/3 specialist told the IS chief that his new employer was nearly doubling his salary of $60,000, a deal the IS chief just couldn't match.

NotesView in sight

Lotus and Hewlett-Packard lawyers were busy last week hammering out the details of a pact to offer a Notes management application called NotesView to run on HP's OpenView network management platform, according to sources close to the deal. The marketing and development agreement will likely be announced this week or next and will include a bundling arrangement with HP/UX servers, the sources said.

Array on the way

After throwing its weight around in the mainframe disk array market, EMC will focus on networked storage with a mid-November rollout of an open systems RAID box. The upcoming array will support multiple Unix systems simultaneously, industry sources said.

Football coach potatoes can now become couch-bound commentators, thanks to a new CD-ROM from RealTime Sports in New York. The Official National Football League Interactive Yearbook on CD-ROM contains 60 minutes of video clips and 90 minutes of audio covering player profiles. It ships next month for PCs and Macintoshes for $49.95. To arm yourself with some real-world information or to toss some news items or tips Computerworld's way, call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.

Why would KPMG Peat Marwick's Government Services practice want to move CICS applications to an open environment?

LETS JUST SAY THEY LIKE SUPPORTING THEIR CLIENTS.

This could easily have been a story about the customers who got away. Except they didn't get away. Because the Government Services Practice of KPMG Peat Marwick made a strategic decision to move their key product, FAMIS – a financial and accounting package developed for use on IBM mainframes – to the UNIX* platform. That way, Peat Marwick reasoned, they'd be able to satisfy their clients' demand for open systems applications. And keep them from becoming ex-clients. And it worked. Thanks in no small part to UniKix Technologies.

We'll let Bill Blaustein, a Principal of the Government Services Practice, tell the story:

"It's so incredibly easy, we are now able to do it in our spare time.

"KPMG Peat Marwick has long been the dominant vendor in the government market. In fact, we introduced FAMIS to our clients in the early 1970's, when many were IBM mainframe customers.

BILL BLAUSTEIN

"But technology changes. And by 1992, we found ourselves faced with the unfortunate reality that our product was linked to a technology that was highly proprietary and not at all cost effective.

"Of various companies in the CICS downsizing business, UniKix Technologies was the only vendor who could move source code without having to change or re-write it. We checked their references and found that they were every bit as good as we thought, and great with service and support.

KPMG

"The results were that in two weeks, without any prior UNIX or UniKix experience, we moved 300 programs from the mainframe to a UNIX environment without a single code modification.

"We were able to immediately begin selling the product in this new configuration. In fact, we promptly sold an existing client who otherwise would have become an ex-client. And we are now able to participate in bids that we had to pass up before.

"UniKix Technologies provided us with a competitive advantage thanks to their UniKix solution, and we look forward to continuing success well into the 21st Century."

If you think your business could benefit from a similar advantage, we suggest you call UniKix Technologies at **1-800-765-2826** for a free copy of *Critical Success Factors in Downsizing.*

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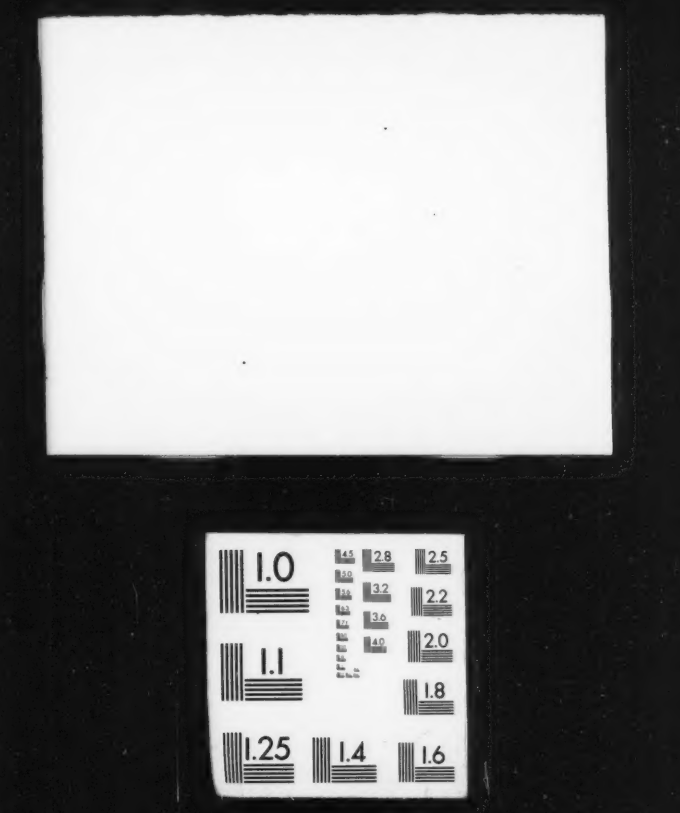
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